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A TREATISE UPON *PLANTING*, GARDENING, AND THE MANAGEMENT OF THE HOT-HOUSE.

CONTAINING

I. The Method of planting Foreſt-Trees in gravelly, poor, mountainous, and heath Lands; and for raiſing the Plants in the Seed-Bed, previous to their being planted.

II. The Method of Pruning Foreſt-Trees, and how to improve Plantations that have been neglected.

III. On the Soils moſt proper for the different Kinds of Foreſt-trees.

IV. The Management of Vines; their Cultivation upon Fire-Walls and in the Hot-Houſe; with a new Method of dreſſing, planting, and preparing the Ground.

V. A new and eaſy Method to propagate Pine Plants, ſo as to gain Half a Year in their Growth; with a ſure Method of deſtroying the Inſect ſo deſtructive to Pines.

VI. The beſt Method to raiſe Muſhrooms without Spawn, by which the Table may be plentifully ſupplied every Day in the Year.

VII. An improved Method of cultivating Aſparagus.

VIII. The beſt Method to cultivate Field Cabbages, Carrots, and Turnips for feeding of Cattle.

IX. A new Method of managing all Kinds of Fruit-Trees, viz. of proper Soils for planting, of pruning and dreſſing them; with a Receipt to prevent Blights, and cure them when blighted.

BY JOHN KENNEDY,
GARDENER TO SIR THOMAS GASCOIGNE, BART.

THE SECOND EDITION,
CORRECTED AND GREATLY ENLARGED.

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A

TREATISE

ON

PLANTING

AND

GARDENING.

CHAP. X.

Of the Nurſery.

NURSERIES for raiſing foreſt-trees are very neceſſary for every gentleman that is fond of planting; for without a good one no great progreſs can be made in that moſt delightful and profitable amuſement.

Most authors who have written on this ſubject have differed in their opinions, even

ſo far as to be almoſt quite contradictory to one another. I will not preſume to ſay who are right or who are wrong, but I ſhall give ſome directions that are very different; and I fix my opinion on this ground, that is, by comparing moſt of the capital nurſeries in England, which are managed by a ſet of men knowing in their profeſſion, and whoſe buſineſs it is to have all kinds of trees in perfection.

It is not intended to give directions for making a nurſery fit to raiſe all the curious trees and plants that are introduced into England, and which thrive very well when taken from the nurſeries where they are raiſed with ſkill and art, and when they are carried into very different ſoils and ſituations all over the country thrive very well; that would be a taſk too elaborate for the brevity of this treatiſe; beſides it would be too expenſive for gentlemen, as it is the quantity that makes it worth the ingenious nurſeryman's trouble and care to cultivate ſuch plants.

THE bringing the common ſorts of foreſt-trees to perfection, and making them fit for all kinds of ſoils and ſituations, is what I ſhall give directions for, and the chooſing a proper ſoil for that uſe; or, where it cannot be had, to make one by art, fit for the purpoſe, at as little expence as poſſible.

IT is a general opinion that all nurſeries for raiſing trees ſhould be the ſame, or very near the ſame, with the ſoil the trees are to be planted in; but this is ſetting out on a very wrong principle; for, as I ſaid before, all the capital nurſeries in England are on a fine light ſandy loam, or they are made ſo by the nurſerymen, who certainly are the beſt judges; and, as a proof of their judgment, all the trees that are taken from ſuch nurſeries, thrive when planted on much worſe ground than where they were raiſed.

I HAVE ſaid more on this ſubject than I firſt intended, and am obliged to add a few

words more, to prevent a notion that has long prevailed. I know there are many gentlemen ſo prepoſſeſſed in that opinion, that they will not allow any other kind of ground for their nurſeries, than what is nearly ſimilar to the ſoil they intend to plant, and this is the reaſon why ſo many bad-thriving plantations are to be ſeen in many parts of England.

If a plantation is to be made on a poor gravel or a ſtiff clay, what kind of a nurſery would ſuch ground make? all the plants raiſed on ſuch ground would be poor, ſmall, hide-bound, ſtarved things, very unfit for planting in any land, but more ſo in poor gravel or clay.

To this it may be objected, that I have given directions for ſowing the ſeeds of trees on ſuch ground, as the beſt method for raiſing wood in ſuch ſoils. There is a great difference between ſowing where the plant is to remain, and ſowing to raiſe plants to be tranſplanted: thoſe that are

ſown

ſown in ſuch ground to remain, twiſt and twine their ſmall roots amongſt the ſtones and gravel, ſo as to protect themſelves from froſt in winter and drought in ſummer; but if ſuch plants were to be planted with the greateſt care, they would be very liable to ſuffer much from the drought the firſt ſummer, and be entirely thrown out of the ground the next winter, as they would have ſo few ſhort roots which could make no reſiſtance.

It is very wrong to enrich nurſeries with dung. Although the nurſerymen dung their ground very plentifully, they do it with great judgment, and never plant trees until it is well rotted, and mixed with the mould, ſo as to be quite incorporated, and generally take a crop of peaſe or beans before they plant; for if trees were to be raiſed on a bed made rich with dung, they would grow ſo vigorouſly, and be ſo full of juices, that if they were even planted in very good land, they would be in danger of being loſt for want of a ſuffi-

cient quantity of nouriſhment, and moſt of them would be, what is called in the common planting phraſe, hide-bound.

THE proper ſoil to make a nurſery to raiſe foreſt-trees, is a light ſandy loam of two feet (if it can be got) or eighteen inches, which will be a ſufficient depth to prevent drought in ſummer affecting the trees, and the froſt hurting them in the winter.

AN old paſture field that ſlopes gently to the ſouth is the beſt ſituation, for low and flat grounds are not proper, as they are liable to be over-blown in winter in deep driving ſnows, which will be apt to break many of the young trees. Beſides, if the ſnow be blown very thick, which often happens, it will lay much longer than on a riſing ground, and be very detrimental to the young plants.

TRENCHING is always recommended for making a new nurſery, but it is not always

ways needful; for if the field that it is intended to be made on be clean graſs and free from moſs, plowing will anſwer; if moſſy, trenching will not be ſufficient; for the moſs, although turned down two feet deep, is long in rotting, and turns to canker, which is very deſtructive to young trees.

If the beſt ſpot that can be found is full of root-weeds, buſhes, or any kind of rubbiſh, it will be neceſſary to trench, and pick out all the weeds and roots, for there is no poſſibility of keeping young trees clean where the ground is full of root-weeds. But it is ſeldom that needs to happen, as the nurſery may be made at a diſtance from the houſe; and if a convenient ſpot can be found in a bye corner of the pleaſure-ground, it will not be diſagreeable, eſpecially to lovers of planting, if it is kept in good order; and its being ſo much in view will cauſe it to be kept clean.

If the field is a fine clean graſs, and in

pretty good condition, plow it up early in the ſpring, and ſow it very thick with the common grey peaſe: when they are come into full bloom, plow them all in as deep as the plow can go, and let the ground remain until they are rotten, which will be in ſix weeks if they are well covered; then harrow it well with a heavy harrow, and plow it acroſs: in three or four days after harrow it, and before winter plow it again, and let it lay rough all the winter to mellow. In the ſpring, firſt harrow, and then plow it; then harrow it well with a heavy harrow, and it will be in good order for ſowing and planting all kinds of foreſt-trees in the nurſery way.

If the field is moſſy, pare and burn it as ſoon as the ſeaſon will permit: plow it directly, and ſow it very thick with turnip or rape ſeed; and when it is grown fluſh, eat it clean off with ſheep. As ſoon as it is eaten bare, plow it as deep as the plow can go; and when the weeds begin to grow, harrow it firſt; then plow, and

let it lay all the winter. In the ſpring, plow and harrow it, and it will be fit for uſe.

If the ground allotted ſhould be full of weeds and roots of buſhes, trench it early in the ſpring, and pick all the roots as clean as poſſible. As ſoon as it is finiſhed ſow it with peaſe in rows, that the weeds may be kept clean, for in ſuch ground there will many annual weeds come up. As for docks, nettles, and quickers they muſt be taken up with a dung-fork, for they cannot be deſtroyed by hoeing. As ſoon as the peaſe are in bloom plow them in, and when they are quite deſtroyed plow the whole again, and harrow it well to get out the weeds, if any remain, and let it lay rough all the winter. Plow it in the ſpring, and then it will be in good order.

If a convenient ſpot cannot be found that is of a proper temperature, it muſt be made ſo by art: a ſtiff loam, or a light black earth, are the only ſoils that can be made into a good nurſery. When better

cannot

cannot be had a ſandy ſoil will do; but it requires a great deal of rich compoſition to make the trees flouriſh.

A FIELD that has been in corn is very unfit to be made into a nurſery; but if a graſs field and a ſtiff loam, you muſt lay over all the graſs a good quantity of ſand, two inches thick at leaſt; and if this was done in the beginning of winter, to be waſhed in with the rain and ſnow, it would be the beſt method.

AFTER it has lain ſome time it will cruſt over and dry at top, and will be liable to be waſhed off with the rain if the ground has a declivity, which it ſhould have; to prevent that, give it a good harrowing acroſs the field, and that will open the ground ſo that the ſand will mix much better. Early in the ſpring plow it deep, and get from old woods where leaves and ſticks have rotted, the bottoms of old wood-ſtacks, and the cleaning of ſtreets, a large quantity, and lay all over the field

as ſoon as it is plowed; and when the ſwarth has laid long enough to be rotten, plow it acroſs, harrow it well, and plow it again; then ſow it with rape ſeed, and manage as before directed, and it will be in tolerable good order.

If a light black earth, lay an inch of ſtrong loam all over it; plow it immediately, and then lay ſome more loam on and harrow it very well: when it has laid ſome time in that ſtate, croſs-plow and harrow it, then ſow it with rape ſeed, and manage as before.

By following ſome of theſe methods according to the nature of the ſoil, there will be a good nurſery fit to raiſe all kinds of common foreſt-trees; only where the ſeeds are ſown, for the planting of poor gravelly land the ground ſhould be made lighter than any other part of the nurſery, for the reaſons before given.

There are many kinds of foreſt-trees, ſuch

ſuch as the Elms of all kinds, that are propagated from layers with great ſucceſs; and indeed all kinds of foreſt-trees will grow by layers, ſo that thoſe who are curious, and find a ſeminal variety that is remarkably different from the original, the only way to have it preſerved genuine is to convert it into a ſtool, and raiſe plants by layers.

It has been objected, that foreſt-trees raiſed from layers do not grow ſo vigorous and ſtraight as plants that are raiſed from ſeed. There may be ſome truth in this aſſertion, but not ſo much as is generally believed; for it is owing more to the method of laying, than the nature of layers, that occaſions this remark. If layers are made from young ſtraight ſhoots, they will grow as well as ſeedlings; but when laid from ſmall ſhoots of a ſide-branch of an old tree, it is very difficult to make any thing of them but buſhes; yet they will take root very well, and this is a good reaſon why layers are much better than

ſuckers,

ſuckers, for all plants that are to be kept low and buſhy. If a ſucker was to be laid it would not alter its nature, it would ſtill grow tall and ſtraight; but if the young ſhoots of an old branch are laid, they will take root and grow, but never ſhoot freely: if a fruit-tree, it will bear very plentifully; and if a flowering-plant, it will flower much better than plants that are raiſed from ſuckers, or plants raiſed from cuttings of vigorous young wood.

In the nurſery there ſhould be a quarter allotted for the uſe of planting ſtools; and as the whole ſucceſs depends on the fineneſs of the young ſhoots that are to be laid, the place where they are to be planted ſhould be light and rich; rich, to encourage the young ſhoots to grow ſtrong and vigorous; and light, that they may make good roots when laid. The ſtools ſhould not be planted too thick; for although they may ſeem thin when firſt planted, if they thrive as they ought to do they will be very large in a few years,

and

and have many layers; ſo that they ſhould have room to be laid, and alſo to let the air paſs freely between them: if they are planted in rows, which is beſt, they ſhould not be nearer than eight feet ſquare.

As to the quantity of ground neceſſary for a nurſery, that depends on the plantation which is intended. The trees that are to be planted in poor gravel, bare, ſtony, and cold poor land, will take up a great deal more of ground in the ſeed-beds than if they were ſown in the common old method; but as they are to be taken from the ſeed-bed, and planted out for good, there will be leſs ground neceſſary for them than if they were to be tranſplanted from the ſeed-bed into the nurſery, to remain for four or five years.

It ſhould be conſidered what ſort of ground, and what quantity of each ſort is to be planted; that muſt determine the ſize of the nurſery. It would be much to

the advantage of all ſeedling-trees to have the beds they are ſown in, lay fallow all the year before they are ſown; and to any country gentleman that is fond of planting, half an acre of ground more than is abſolutely neceſſary will not be of great conſequence.

THE beds which the ſeedlings are raiſed in for poor land muſt be quite cleared every year: they muſt be taken up with the ſpade carefully, ſo as to break none of their tap-roots; if any are broken by accident, they muſt be trimmed, and planted in ſome convenient place of the nurſery, to ſtand for ſome time until they are fit for planting in ground that is deep enough to admit of making holes to plant them in, and they will be as good as any for that uſe, as all trees that are taken from the ſeed-bed to plant in the nurſery ſhould have all their tap-roots cut off.

THERE ſhould be no more ſown in thoſe beds than can be planted every ſeaſon, for

for they will not be fit to plant in very poor ground next year; but if there are more than are wanted, or can be planted, they ſhould be taken up, have their roots trimmed, and planted in the nurſery. They will be much better for that purpoſe than thoſe that are raiſed in beds that are ſown very thick, and ſtand ſo all the ſummer.

As ſoon as the beds are cleared they ſhould be thrown into little ridges, and lay ſo till the beginning of May, when they ſhould be dug over and laid flat, and remain ſo all the ſummer, for the advantage of keeping them clean; if they were to remain in ridges, many of the weeds would be buried in hoeing, and ſo grow again immediately. But it will be greatly to their advantage to throw them into ſmall ridges before winter, to mellow them for ſowing in the ſpring.

This management of the ground thrown into little ridges will be of great ſervice, for

for it will make them produce as fine and vigorous plants as if there had never been any thing ſown in them; and by this management they will be in good order for many years, by only laying a little of the compoſt every other year upon them, as will be directed to be made for the recruiting the nurſery-ground, which muſt be greatly impaired by being conſtantly full of young trees.

The following compoſition, if properly made and laid on, will keep the nurſery in good order, ſo as to produce all kinds of foreſt-trees as ſtrong and vigorous, and free from all blemiſhes, as if the ground was juſt taken in, without uſing one grain of dung, which is a very ſcarce commodity in the country, eſpecially where the gentlemen are farmers, and fond of improvements, as moſt of them are at this preſent time.

If the nurſery ground is ſtiffer than could be wiſhed, add ſand to the follow-

ing articles; if inclining to ſand, which is the beſt, add ſome good rich loam, and it will make ſo good a compoſition that its effects will ſurprize and anſwer the moſt ſanguine expectations; and every place affords the materials, which may be procured with little trouble. Collect docks, nettles, graſs, which ſhould be cut before they come to ſeed, ſtraw, ſtubble, rotten wood, leaves, and ſhovelings of the ſtable-yard, and make a ridge of them two feet thick, ſix feet broad, and in length as you can get ſtuff, or according to the largeneſs of the nurſery.

If the ground of the nurſery is light, put a layer of good loam, four inches thick, the whole breadth and length of the ridge; with another layer of the above things, two feet; and then another layer of loam; and ſo on till there is a ridge eight feet high: let it lay until winter, and when the firſt deep ſnow falls trench it all over, laying all the ſnow in the middle. It may then lay till the middle of ſummer, when it

it ſhould be turned again, taking great care to keep it clear of weeds between the turnings; the firſt hard froſt in winter turn it again, laying all the frozen parts into the inſide, and it will be fit for uſe in the ſpring.

Some time before the ſeed trees are intended to be ſown, lay two inches of the compoſition all over the ground, and prick it over two or three times to mix and incorporate it with the old ground; by being thus worked it will be much moiſter (if the ſeaſon is very dry) than land that has been leſs worked: it will alſo be neceſſary to prick the beds over juſt before they are ſown; and if they are very mellow it will be much better not to rake the beds, but only to level them even with the ſpade; then ſow the ſeeds, and with a flat board preſs the bed level, and cover it according to the ſize of the ſeed.

It would be a good method to have a large heap of ſtuff, the ſame as the beds,

mixed ready to cover the ſeeds, which is much better than taking the earth from the alleys for that uſe; for it is trod a good deal in ſowing the ſeeds, and if the ground is wet, it is rendered very unfit for the purpoſe; beſides it is of great detriment to the ſeeds on the ſides of the bed to have deep alleys, as they will be much drier than if the ground was fluſh, and they will not thrive ſo well as thoſe in the middle.

After there is a ſufficient quantity of the above materials collected to make a proviſion for three years, it will be proper at ſome diſtance to begin a new heap, which may be gradually increaſed as the materials can be got; but it need not be turned until there is a quantity ſufficient for three years more, and only keep it clear of weeds during the time of collecting; ſo that by having two heaps, one fit for uſe, and one in gathering, there will be always a proviſion for keeping the nurſery in good order. It will be of great ſervice to the com-

compoſition that is uſing, to give it a turning every winter when it is hard frozen, turning all the frozen parts into the middle; but this muſt not be done when it is covered with ſnow; for although it was abſolutely neceſſary to have ſnow to mix with the ſtraw and other hard dry things to make them ferment and rot at the firſt turning, it would be very prejudicial now; it would rob it of its ſalts, and make it of little value if any ſnow was mixed with it.

This compoſition is much better for a nurſery than dung, as it will have all the advantages of being kept in good heart, and will cauſe none of thoſe pernicious misfortunes to young trees that dung is very liable to do: beſides, it is attended with no expence except that of collecting it, which is very trifling; and there is this great advantage where there is a compoſition of this kind made, that it will keep the grounds in order, as all thoſe pernicious weeds, docks and nettles, will be cut and kept from ſeeding.

THE nurſery muſt be put into a regular form; and as it is abſolutely neceſſary to be kept clean, it ſhould alſo be neat, and if at a diſtance from the houſe it will be an agreeable walk. No gentleman will be at the expence of having a good nurſery who is not fond of trees and planting, and to ſuch it is very agreeable to ſee a collection of plants of different ages growing, and ſome juſt riſing out of the grounds which will in time enrich his family, and beautify his eſtate and country.

PERHAPS ſome people may think too much has been ſaid about the preparation of the ground, the method of ſowing, and the compoſition for recruiting the ground after it has been uſed, and that the trees may be purchaſed at an eaſier expence than by following all the directions that are here given; and that the chief thing which thoſe that raiſe foreſt-trees for planting ſhould ſtudy, is to have them good, and fit for the different ſoils they are to be planted in; but ſuch opinions will

will be found to be wrong grounded, as the generality of thoſe who raiſe foreſt-trees are at a greater expence than the work that is here mentioned will coſt, and in general come far ſhort of the ſucceſs, which will attend thoſe that follow with accuracy what has been directed, beſides the advantage of having fine trees of all kinds to ſupply whatever deſigns they intend to carry into execution.

CHAP. XI.

Of Pruning Foreſt-trees.

THERE are a number of people who are againſt the pruning of foreſt-trees, eſpecially the workers in wood, who ſay it occaſions as many blemiſhes as there are branches cut off, and have prepoſſeſſed many gentlemen to be of the ſame opinion. It is not pruning, but the bad methods of performing it that occaſions the objection.

THICK planting in poor land is the beſt method to make them prune themſelves; but that method will not hold good in rich or in middling land, for if the trees were to be planted ſo thick as to prune themſelves, they would draw up weak and

and be good for little. Beſides, trees in good land puſh great ſide-branches, which often rob the main ſtem and make them grow crooked; whereas in poor land they puſh many ſide-branches, but they are weak, and the leading ſhoot is generally ſtiff and ſtrong. To have good and fine timber on rich land, the trees muſt be pruned from their firſt planting.

Trees planted in good land, or even in middling ſoil, ſhould be at eight feet diſtance if they are to ſtand for timber; but if the plantation is intended to be conſiderable, the trees ſhould be planted on good land, at four feet diſtance, and they will make a fine nurſery. If the trees are five or ſix feet high when planted, in three or four years time they may with great ſafety be removed, and another plantation made of them; but if it be at no great diſtance, they may be carried with balls of earth ſufficient, without being hurt in moving them; ſo that there will be the advantage of having

having another plantation in a year's time as good as the firſt. Trees thus planted will thrive better, and be ſtronger, than thoſe raiſed in nurſeries, and can be taken up with better roots. It will be attended with a little more expence in making the holes in the field, than if the trees had been planted in the nurſery, but the advantage the trees will receive will more than compenſate for the trifling difference in the expence.

When the trees are taken up to be planted, all the ſtrong branches ſhould be cut off quite cloſe to the bole, and all the ſmall ones left at their whole length. The latter end of June, or the beginning of July, the whole plantation ſhould be looked over with care, and all the young ſhoots that have ſprouted, where the branches were cut cloſe to the ſtem when the tree was planted, muſt be pulled off by the hand: they will ſlip very eaſy at that ſeaſon; but if ſuffered to grow much longer, they will be ſo hard that the bark

of

of the tree will be in danger of being torn in endeavouring to get them off, and there ſhould none of them be cut, for if they are they will the next year puſh out a whole buſh of ſprouts at every amputation, and ſometimes in the ſame autumn, which will occaſion double labour, as they muſt be pulled off; beſides, they grow to a bunch or nob on the bole, and cauſe a blemiſh in the tree.

In any of the winter months the whole plantation muſt be pruned; and all the largeſt of thoſe ſmall branches that were left when planted be cut off quite cloſe to the bole; but care muſt be taken not to leave the ſtem too naked, that is, there ſhould be ſmall branches left regular all over it. Attention ſhould likewiſe be obſerved to leave no branch near the top of the tree equal to the main ſhoot: this will prevent its being forky.

In July following, the young ſhoots muſt be pulled again, and if there is any

great diſtances on the bole, where there are no branches, a young ſhoot may be ſuffered to grow to fill up the vacancy, and in the winter, pruned as they were before. This work muſt be performed regularly winter and ſummer, until the trees have got ſufficient length of ſtem.

As the trees grow in ſtrength, there ſhould a foot or two of the bottom of the tree be cleared of all branches every year, and never any more ſuffered to grow; but this ſhould not be too haſtily done, for all trees grow much better, ſtouter, and ſtronger when the ſtem is well furniſhed with ſmall branches; for when it is too much diveſted of them it grows too tall for its ſtrength, becomes top-heavy, and unable to ſupport itſelf; is eaſily twiſted by the wind, and if its not broke, is ſo damaged as never to make a good tree, and will be all ſhaken when cut. If trees are thus managed for a few years, there will be no blemiſhes, they will be very handſome, as well as very valuable, and when

when cut no fault will be found with their having been pruned.

THIS method of pruning will anſwer very well for all kinds of foreſt-trees but the Elms, which require a different method to make them fine trees.

THE Engliſh Elms are propagated from layers, which if properly performed they will have good roots, and be fit to take up a year after they are laid. Every kind of Elm will grow very well by layers.

THE Engliſh Elm is the fineſt tree of all the kinds of Elm, and in proper ſoil grows to a very great ſize; its layers do not take root ſo ſoon as the other kinds. If it was laid in the autumn, as ſoon as the leaves are off, it would greatly encourage its rooting, for the young twigs that are to be laid are hard and dry, and by being in the ground all the winter they are ſoftened, and take root much better. When they are taken up, they ſhould have their roots

roots dreſſed, and planted as ſoon as poſſible, as their roots are ſmall and dry faſt. The ſide-branches, of which they are very full, ſhould be all cut off at three inches from the ſtem from top to bottom.

In the beginning of July they ſhould be gone over carefully, and all the ſhoots pulled off, but two of the ſmalleſt, from the ſide-branches that were ſhortened, for as they will puſh many on every ſhortened branch, they will both rob the main ſtem, and be too heavy for the plant to bear.

In any of the months next winter the ſide-branches muſt be thinned and cut cloſe to the ſtem, ſo as to ſtand regular quite round the bole, at a foot diſtance at the bottom, and at eight inches towards the top; and the ſide-branches on the main ſtem of laſt ſummer muſt be ſhortened to three inches.

Next July the ſprouts that ſhoot from where the branches were cut cloſe, ſhould

be

be pulled off as before, and the top-branches that were ſhortened before muſt alſo be thinned.

As the tree grows tall and ſtrong, it ſhould be cleared at bottom of all branches and kept clean. This ſhould be done every year to get a clear ſtem; as the ſide-branches, that were left at a foot diſtance all round the ſtem, begin to grow thick, they ſhould be cut cloſe off to the ſtem; and if it is not near the bottom ſome ſmall ones ſhould be allowed to grow, and the ſide-ſhoots that are ſhortened upon the main ſtem ſhould always be thinned the year following.

This work ſhould be regularly performed winter and ſummer until the tree has got ſufficient length of bole, and they will be fine ſtraight trees, free from all blemiſhes.

The common rough-leafed Elm is a good foreſt-tree, and for many uſes is pre

ferable

ferable to the Engliſh Elm; and it has another conſiderable advantage, that it will thrive in very indifferent ground; but it has a great tendency to grow crooked, to have a large head, with very ſtrong ſide-branches.

It may be pruned as the Engliſh Elm; but I know of no method, ſo good to keep them ſtraight, as thick planting, and by that they may be brought to be fine trees. They ſhould be planted firſt at three feet diſtance, and in four years, every other tree, may be taken up and removed into another plantation, and planted at ſix feet diſtance, which is ſufficient room for them to grow to timber.

All the other kinds of Elms may be managed as the Engliſh, for they are all of them of the ſame nature as to their culture, but far inferior as to their utility, eſpecially the Dutch, which thrives very well for twenty years, and then in general is at a ſtand; beſides, the wood is of no great value.

The Elms of all kinds, although they have never been pruned, and are grown very rude, may be reduced to order without any detriment to the wood; but the whole bole will puſh young ſhoots after they are pruned, as well as where there are branches cut off, and will take a good deal of labour to keep them clean for three or four years.

If the trees are ſtrong and ſtiff in the bole, for they may be pruned at any age, the head ſhould be left round and handſome, which greatly hinder the ſhoots from growing ſo numerous on the bole, and they will ſooner give over growing; but if the bole is ſlender, the top ſhould be lightened to the very laſt year's ſhoot, but none of thoſe towards the top ſhould be cut cloſe; and it will be neceſſary to leave ſome branches two or three feet long, but they ſhould be as equal round the bole as poſſible.

The pruning of Firs and Pines may be

performed with tolerable ſafety; but it is not to be recommended as a good practice. The beſt method is to plant them in clumps, even on good land, at ten feet diſtance tree from tree, and they will prune themſelves.

But if Silver or Spruce Firs are intended for ornament, they ſhould have fifty feet at leaſt, and they will make a fine ſhew; but as the ground round would look naked for many years, the number intended to ſtand ſhould be planted firſt, and then the ſpaces between may be filled, ſo that they may ſtand at ten feet diſtance; but they ſhould be removed before the branches meet, for if they are deſtroyed it ſpoils their beauty.

If there is a neceſſity to prune Firs or Pines that hang over and ſpoil better trees, it ſhould be done in the winter, and no branches be cut nearer than two feet to the bole; for if they are cut cloſe they make a blemiſh, but if cut long they decay gradually and do no hurt.

THE method of pruning here directed may ſeem to take a great deal of labour, and be a very great expence, more than the advantage the trees will repay. By being pruned the trees will be of a much greater value, and the expence will not be much, if regularly performed every year. As to the pulling the young ſhoots at the proper ſeaſon, for then they will come off very eaſy, a man will go through a great many trees in a day, even if they are large; for although the directions are long, they could not be abridged to be made plain, as they are not in general practice; but when once they are regularly carried on, they will not be expenſive, and will anſwer beyond the moſt ſanguine expectation.

WHEN the trees are ſmall and can be eaſily bent, they may be pruned and pulled by the hand, ſtanding on the ground; but when the trees are become ſtrong and ſtiff, it is not a good way to bend them, for although they may ſeem to receive no hurt, it certainly ſtrains the bark on both ſides, and muſt be a great detriment.

When the boles are ſo weak that they cannot bear a ladder, and are too ſtiff to bend, the beſt way is to have a light pair of ſteps ſix or eight feet high, which will be a ſufficient length to clear the bole until it is ſtrong enough to bear a common ladder; and the common pruning irons will dreſs the tops: there ſhould be three ſizes of them; they are called half-moons.

The management and right ordering plantations on good, or even middling land, is of the utmoſt conſequence; and unleſs they are properly taken care of will never be very fine timber. Trees on good land will thrive, and there will be many fine ones amongſt them, although there is no care taken of them after planting; but there will be many bad ones to one good tree. If they had been dreſſed, all or the greateſt part of them would have been good timber.

There are to be ſeen in natural woods, and alſo in plantations, many mere buſhes with

with boles not a yard long, which would have been good trees, had there been a little labour beſtowed upon them. When the following directions are put in practice, they will remedy all thoſe evils, and ſave many a tree.

On poor land, as has been before related, thick planting will anſwer the ends of pruning and dreſſing; but on good ground it will not anſwer to make good trees, unleſs proper care be taken of them; and they muſt be treated in quite a different method from thoſe on poor ground; for as the trees grow much faſter, they will require care and labour to keep them in order, but no great expence if regularly performed.

If trees on good land are planted thick, which is the beſt method, they muſt be pruned regularly ſummer and winter, as directed, for they muſt never be allowed to grow to be thickets, for that would draw and ſpoil them entirely; and as they

are planted thick, to remove when they want room, to encourage their growth at firſt planting, and all the trees being regularly pruned, when they are to be removed you have only to dreſs their roots, and move them into another plantation.

If they are to carry only a little way, thoſe taken up in the morning can be planted in the afternoon, their roots will require but little dreſſing (if properly taken up) although there be no earth carried with them; but if they were moved with ſmall flat balls, which may be eaſily done, as they will have good flat roots, and there would be no occaſion to cut any more than the ſmall ſtraggling roots that were cut with the ſpade in taking them up.

The expence of carrying them with balls will not be great, and gentlemen that are fond of planting would not regard ſuch a trifle to have another plantation as large as the firſt, which in two years it will be impoſſible to diſtinguiſh which

is the beſt, or the firſt planted. All plantations on good land ſhould be planted thick, and managed in this manner, and if they were would be fine trees. But there are many plantations on good land, and planted thick, that are never pruned, nor a tree removed, which are now mere thickets of ſmall and unſightly trees.

CHAP. XII.

Of Pruning Fruit-Trees.

IN my treatiſe on gardening, I gave particular directions for making Kitchen-gardens in ſuch a manner, that neither the roots of the wall-trees, nor thoſe planted round the quarters, for dwarfs or eſpaliers, can meet with any obſtructions to canker and impede their growth. The method in practice, is to mark out the walks in kitchen-gardens, and to remove all the good earth, and make them the common receptacles for all manner of rubbiſh during the making of the whole garden.

This method is very prejudicial to the trees round the quarters, which ſeldom have above four feet to ſpread their roots, before they ſtrike into the rubbiſh. This is one cauſe of their being ſhort-liv'd, and producing ſo indifferent fruit after the fourth or fifth year.

It is a general complaint that all directions for pruning are ſo prolix, that they are difficult to be underſtood, even by thoſe of experience in that branch. To remedy theſe defects I ſhall uſe my utmoſt endeavours to render this treatiſe as plain and eaſy as poſſible.

There are many things materially neceſſary to be conſidered beſides pruning, in order to have healthful trees, without which it is impoſſible to have good flavoured fruit.

There are gardens that produce fine fruit of a high flavour, and others contiguous to them, whoſe fruit are not much ſuperior to crabs in reliſh, although managed

managed (as to pruning) both exactly after the ſame method.

THIS difference of flavour is generally attributed to the ſituation, but never to the ſoil, from a ſuppoſition that there is little difference.

A GOOD ſituation is certainly of great advantage to the flavour of fruit; but if the ſoil is improper, though ever ſo ſkilfully pruned, the fruit will not be high flavoured, although often fair, and beautiful to the eye.

THE general method in making the borders in kitchen-gardens, is to make them rich, without regard to the different kinds of fruit to be planted in them.

WHEN thus prepared the trees will often thrive, look well, and produce great quantities of fruit; but it will be very inferior in flavour to the fruit of thoſe trees that are planted in ſoils which are properly adapted for them.

To remedy this evil, I ſhall give directions for making the borders fit for all kinds of fruit; and to render this eaſy, it will be proper to plant a good many of the ſame ſort together, and not promiſcuouſly, which is the general practice; for if they are promiſcuouſly planted, it will be difficult to prepare the borders properly; in that caſe there muſt be a change in the preparation every five or ſix yards.

In ſmall gardens, where there is only room for a few trees, perhaps one or two of a kind, it will be eaſy to prepare the borders at firſt; but difficult to keep ſo many parcels of compoſt for recruiting them: when that happens, to prevent trouble, all the borders may be made of two ſorts, viz. for peaches and cherries (as will be directed under that head) which will anſwer tolerably well, and is the beſt way where a gardener is not kept.

In large gardens, where there is a large collection of fruit-trees, the preparation anſwers

anſwers for the ſame kind of fruit on all aſpects. There muſt always be a quantity of each ſort of the compoſt ready prepared, to lay on the borders every third or fourth year; this will keep the trees many years in good heart, and the fruit will be very high flavoured.

It will be of great advantage to the compoſt for the borders to be turned over three or four times in a year, and to be two years old before it is uſed.

It will add greatly to its fertility to be turned over in winter when its hard frozen, and all the frozen parts turned into the inſide; it ſhould not be turned when covered with ſnow, unleſs it is ſwept clean.

Having now given directions for the management of the compoſt, before I proceed any further, ſhall give general directions for planting all kinds of fruit-trees, on walls, dwarfs, and eſpaliers, on borders and in orchards.

Wall-

WALL-TREES ſhould never be planted nearer the wall at bottom than nine inches; if they are planted ſo cloſe, for the bole to preſs againſt the wall, it often gums and cankers them.

THE proper diſtances being marked on the wall (which ſhould be aſcertained for each kind of fruit) open a hole a foot ſquare, and ſixteen inches deep, in which lay a flat ſtone at leaſt two inches thick, and on the ſtone three inches of the mould prepared for planting.

THE roots of the tree muſt be pruned ſo to ſtand ſloping on the mould laid on the ſtone, the head inclining to the wall; fill up the hole with the planting mould, and tread it gently; then looſen it an inch deep with the ſpade, after treading it. Cover eighteen inches round the bell of the tree with moſs, two inches thick, preſſing it flat with the hand; faſten the tree to the wall with a ſingle nail and ſhread, to prevent its being ſhaken with the wind, but ſo looſe that the tree

may

may not hang by the ſhread, if the ground ſhould chance to ſink. There is nothing further neceſſary, until they are headed down in ſpring, which ſhould never be done before the buds begin to ſwell.

The trees for walls are generally brought from ſome diſtant nurſery, and are ſome days out of the ground; for which reaſon all the ſmall roots muſt be cut cloſe off the main roots, and theſe properly ſhortened, and never left croſſing one another.

It is preferable for all kinds of wall-trees to have but one ſtem to be young and vigorous. If the ground is tolerably dry in autumn (after the leaves are fallen) the ſooner fruit-trees are planted the better; but if the bottom is of a cold watery nature, the ſpring is preferable.

If the trees to be planted are on the ſpot, they may be removed with ſafety, although the leaves are freſh; when that is the caſe,

there is no occaſion to cut off any of the ſmall roots; but if they are out of the ground a day, the ſmall roots dry, the bark ſhrivels, and the tree often decays; for which reaſon, it is beſt to let the leaves drop before the trees are removed to a diſtance.

CLEAN moſs is preferable to all kinds of ſtraw or dung, to lay round new planted trees; it breeds no vermin, and keeps out the froſt and drought: great care muſt be taken not to bring grubs with it from the field, for it is often pulled up in great pieces, in which there are many: it would be worth the labour to leaſe it all over before it is laid round the trees.

THE planting of dwarfs or eſpaliers in the borders of kitchen-gardens, the making of the holes, and laying the flat ſtones, is the ſame as for wall-trees; but there is ſome difference in the manner of pruning the roots.

In pruning the roots of wall-trees, thoſe on the ſide next the wall ſhould be all cut off, as there is no occaſion for any but thoſe that point from the wall; but for dwarfs or eſpaliers, the caſe is quite different; the roots ſhould be cut to ſpread as regular as poſſible all round, that they may be able to defend the tree, let the wind blow from what quarter it will.

If the trees for dwarfs or eſpaliers are planted in autumn, it would be beſt to faſten them to a ſtake, and head them down in ſpring. A wet bottom is very bad for a kitchen-garden, eſpecially to all kind of trees; for although ſome of them may thrive tolerably well, and bear a great quantity of fruit, it is never good, if the ſoil is prepared with all the art imaginable.

Espaliers are now baniſhed all good gardens, for many reaſons: if the trees are on paradiſe-ſtocks, they are of ſhort duration, and often decaying in patches, which makes them very unſightly. If on ſtocks,

ſtocks, unleſs they are allowed a great deal of room to ſpread and to grow to ſix feet high, they require ſo much cutting to keep them in order, that they ſeldom produce much fruit.

When the eſpaliers are allowed to grow high, unleſs the quarters of the kitchen-garden are large, in ſummer they cauſe the herbage to draw up weak, it is then never ſo good, nor ſo well taſted as when it has free air.

Espaliers are alſo ſtiff and formal, and ſpoil that agreeable rural look of trees growing in the natural way.

Apples on French paradiſe-ſtocks, planted at eight or nine feet diſtance, pruned and kept in an eaſy manner, make a fine appearance, and produce better fruit, and in greater quantities, than when they are in eſpaliers.

Trees planted and trained thus, admit free

free air into the quarters; and the little openings give a view into them which is pleaſant to thoſe that delight to walk in a kitchen-garden.

If the kitchen-garden is large, the trees on the ſouth-ſide of the quarters, behind the north wall, the inſide of the garden, may be planted with apples on Dutch paradiſe-ſtocks, and allowed to grow as high as the wall; it will be very agreeable in ſummer: they laſt much longer than the French-ſtocks, and will bear more and finer fruit; the French paradiſe-ſtocks are apt to canker, but if the walks are good earth, the ſame as the borders, they will not be ſo liable to that misfortune.

To prevent any unſightly trees in the borders round the quarters, it would be right to have a few ſpare ones growing in a corner of the garden, which might be taken up with a bole, and put into the place of any tree that is cankered or decaying. If the tree that is taken up is not

far gone, it may be planted in ſome bye place; moving often ſtops the canker. The only objection to training dwarfs in this manner is, that the fruit is more liable to be blown off than from eſpaliers; if the firſt ſhoots are trained horizontal for two years, they will grow ſtiff, and will not be much hurt by the ſtrongeſt winds. This manner of training will alſo anſwer for common orchards, the fruit will be much eaſier to gather, and not be ſo ſubject to be blown off by the wind, as when the trees are high: it may be objected, that the cattle would crop the lower branches.

The laying flags at the bottom of all fruit-trees is good in all kinds of ſoil. If the roots are dreſſed, and the trees planted as directed, they will never go lower, but ſpread horizontally; they will continue many years, and bear excellent fruit.

It is recommended by ſome, and the practice of many, to lay a quantity of rubbiſh

biſh in the bottom of borders, to prevent the roots getting down into clay, ſand, or gravel: this never anſwers; the roots will ſtrike into the rubbiſh, and even through it, if a foot thick, into the ſand, &c. but as ſoon as the roots reach the rubbiſh, the tree cankers and the fruit ſpots.

THE roots of fruit-trees ſhould not be above one foot deep in the ground, for the ſoil below that is hard, dry, and full of rancid vapours, even in good ſoil. The nouriſhment the roots draw from thence ſpoils the rich flavour that thoſe fruits have whoſe roots are no deeper than the air and rains penetrate.

IT is the general opinion that old trees cannot bear good fruit on account of their age; this is ſeldom the caſe; the reaſon indeed is, all the ſmall roots are ſpread too deep into ſand, gravel, or clay; hence they canker, and the fruit is ſpotted.

APPLES on crab-ſtocks will laſt many years, and bear good fruit. An inſtance of this I ſaw in the ruins of a monaſtery which had been in the ſame family ever ſince its diſſolution, and by tradition the ſame trees that were in the place when it firſt came into their hands ſome hundred years ago.

THE trees were much decayed, but what were alive of them bore fair round fruit, equal except as to ſize to any tree of ten years old. The whole orchard was paved with bricks; the ſoil twenty inches deep, a fine rich loam. There was a plantation of pear-trees about thirty years old; which had covered the wall ſome years, and produced great quantities of fine fruit; at laſt they began to canker, and the fruit to pit: they became every year worſe. But the following experiment brought them to flouriſh again:

THE ground was opened all round the bole of the tree at three feet diſtance; the roots

roots were cut off all round at that diſtance; the bole thinned to the thickneſs of two feet, a ſtone put under it, and the whole filled up with a good freſh loam.

THIS was performed in winter; it was late in ſpring before they came into leaf. They made no ſhoots, and the few ſmall leaves they had ſoon decayed: they had ſome water in the ſummer. This is a proof of the great utility of preventing the roots from ſtriking too deep into the ground.

NEXT ſpring they were in leaf as ſoon as any of the ſame kind, made little wood, but clean, and had ſome fruit, which was fair and clean. The third year they were as vigorous as when firſt planted, quite clear of canker, and produced a great quantity of fine fruit.

HAVING given directions for planting, with ſome reaſons for what has been ſaid on that head, we ſhall now proceed to

prepare the borders for each kind of fruit, adapting the ſoils that will preſerve the trees healthy, and bring the fruit to its utmoſt perfection in ſize and flavour.

The ſoil and ſituation ſhould be conſidered in fixing on a ſpot for a kitchen-garden, for if there is not a foot or more of good ſoil the expence will be immenſe, if the garden is only of a moderate ſize. The beſt natural ſoil for a garden is a light loam, and where eighteen inches deep of ſuch a ſoil can be got the expence will be trifling.

To prepare Soil for Apricots.

The favourite ſoil of the apricot is a light loam: if the natural ſoil is a rich loam of eighteen inches deep, dig from a common as much light ſandy earth as will ſpread ſix inches thick all over the border; to every load of ſandy earth add one barrow of rotten dung. If the natural earth is ſandy, add one third of rich loam;

loam ; and to every four loads of loam add one of rotten dung. If the natural ſoil is gravelly, add one half ſtrong loam, and to every three loads of loam one of rotten dung, and one of rotten wood earth, if it can be got. The compoſition ſhould be laid on the border and trenched over three or four times that it may be well mixed ; the laſt time ſhould be three weeks before the planting ſeaſon, that the mould may be well ſettled before the trees are planted.

THE apricot is naturally inclined to ſhoot ſtrong vigorous wood, eſpecially when the border is rich ; dung is pernicious to all trees (vines excepted) but none ſuffer ſo much from it as apricots, for it makes them gum and canker.

APRICOTS ſhould have more room than is generally allowed them ; the Turkey kind ſhould never have leſs than thirty feet, although the wall is twelve feet high, and the other ſorts from twenty to twenty-four feet.

When the planting ſeaſon is come, mark out the diſtances, open the holes, and diſperſe the mould all over the border. Some time before planting prepare the following compoſition for that purpoſe, viz. four barrows of earth from that prepared for the border, one barrow of very rotten dung, and one barrow of light rich black earth; this is the proportion, the quantity muſt be according to the plantation; it muſt be well mixed and a barrow and a half laid to every hole. The little quantity of dung uſed in planting can have no bad effect, it will make the tree puſh forth fine ſtrong roots the firſt year.

To prepare Borders for Peaches and Nectarines.

Peaches and nectarines are ſo much alike in nature, that they thrive very well on the ſame ſoil; what is ſaid of one may be underſtood of both: the right preparation of the borders is very material, as on this the future ſucceſs depends.

Peaches

PEACHES love a ſtrong loam, in which they thrive beſt, and will come to great perfection. Dung is a great enemy to them, as it cauſes them to ſhoot ſtrong rambling wood, which is very detrimental to the trees; it alſo cauſes them to gum, and prevents their bearing.

IF the natural ſoil is a ſtrong loam, add one inch of very rotten dung, and trench the border over three times.

IF the natural ſoil is gravelly, add one half of ſtrong loam, and two inches of rotten dung; if ſandy, which is the worſt of all ſoils for peaches, add three inches of ſtrong loam to one of the natural earth and one inch of rotten dung; if a fine light rich earth, add one third of a good ſtrong loam. The borders ſhould always be trenched over three times, after the proper mixtures are laid on before planting. The following compoſt muſt be prepared for planting: four barrows out of the prepared border, one of light black earth, and one

one of very rotten dung; one barrow to each hole. The proper diſtance for peaches and nectarines is ſeldom properly conſidered; they are in general planted at equal diſtances, without regard to their growth, though many ſorts require a great deal more room than others.

The early ſorts of peaches and nectarines ſhould be planted from fourteen to ſixteen feet, the late ſort from eighteen to twenty feet. It is a general miſtake in planting walls with peaches and nectarines to have a great number of ſorts, that there may be a variety all the ſeaſon; ſix or ſeven good kinds properly choſen are ſufficient to afford plenty and variety during the ſeaſon.

There are many peaches ſo much alike that it is difficult to diſtinguiſh them even by good judges of fruit.

It is a common practice to plant fire walls with thoſe that ſeldom come to perfection in England without heat.

By this method, it is true, fine fruit may be obtained that cannot be had otherwiſe, but where there is not a great quantity of walling it is attended with many inconveniencies.

It is abſolutely neceſſary to allow the trees reſt, at leaſt every third year; the late ſorts will not then ripen their fruit or wood if the ſeaſon is not favourable; when that is the caſe, much of the young wood will be hurt by the froſt in winter, and the tree ſo mangled, that there is often a diſappointment upon an increaſe of the ſucceeding year.

If the walls are all planted with good kinds that are eatable in favourable ſeaſons without heat, by the help of fire they may be brought to the greateſt perfection, and in the year that there is no fire, they ſtand a good chance of ripening their wood if the ſeaſon is but indifferent.

The Preparation of Borders for Pears.

THE propereſt ſoil for all kind of pears is a ſtrong loam: when the natural ſoil is ſuch, add one inch of very rotten dung, and trench the border over three or four times.

SAND and gravel are great enemies to all kind of pears; on ſuch ſoil they moſs and canker, and never produce good fruit; it is generally ſtony and has no flavour: where the natural ſoil is ſuch, there muſt be added a great deal of loam, and two inches of very rotten cow-dung.

IF the natural ſoil is a ſtiff clay, in that caſe it will be proper to raiſe the border eight inches above the level of the ground, which muſt be with the following materials: coal aſhes ſifted very fine, wood earth where leaves and ſticks have rotted, ſoft ſand from a pit, and rotten horſe-dung of each an equal quantity, to be laid on the

the clay, and worked over until it is well mixed; in which pears will thrive and produce moſt excellent fruit. The mould for planting in this ſtiff border is, one barrow from the border, one of rotten dung, and two of wood earth: this will be fit for the trees to ſtrike root in, after which they will grow very well.

No kind of pears ſhould have leſs room than twenty feet, and many of the more vigorous ſorts ſhould have twenty-four or thirty feet diſtance at leaſt; for when they have little room they grow ſo full of young wood and require ſo much cutting, that they never bear well.

The compoſt for planting with (except the clay border) is, two barrows of the prepared mould, one of rotten horſe-dung, and one of light rich mould; put one barrow of it to a hole.

Pears are a fine fruit and laſting, if brought to perfection. There are many of

the French kinds that are equal in goodneſs, if not ſuperior, to many peaches: an agreeable entertainment in the winter months.

Those that ſooneſt come to perfection in England are, the winter Boncrêtien, the Chaumontelle, Eaſter Bergamot, Virgoulé, Colmar, Beurré, Craſan, and St. Germain.

There are ſome of the above, viz. the Craſan, Beurré, St. Germain, and ſome times the Colmar, prove tolerably good in fine ſeaſons, but are ſo inferior to the ſame kinds in France, that if compared together they would appear a different ſort of fruit. By planting them on a fire wall and giving them a little heat from ſetting until they are fit to pull, it improves them beyond the conception of thoſe who have not ſeen the experiment. In ſmall gardens where the ſouth walls cannot be ſpared, if the weſt aſpect is flew'd it will anſwer for pears and is much better for apricots, the fruit is larger and much better flavoured;

cherries likewiſe are larger and not ſo ſubject to vermin as on a ſouth aſpect.

The Preparation of the Borders for Plums.

GRAVELLY light ſoils are the beſt for all kinds of plums; they bear high flavoured fruit in great quantities; they are not ſo large as when planted in ſtrong earth, but the quantity and richneſs of the flavour make amends for that deficiency.

IF the natural ſoil is a loam, add an equal quantity of poor light ſandy mould from a common.

IF a rich black ſoil, add one third of ſandy loam and one third of poor gravelly earth from a barren common. If the natural ſoil of the borders is a light ſand, add one half of a ſtronger loam: if the natural ſoil inclines to clay, it is very unfit for plums; it muſt be made light or there will be little hopes of ſucceſs. One half of the earth muſt be taken out of the border

border and replaced with light rotten wood earth if it can be got, or with rich black earth: to every load of earth add one of fine ſmall gravel. To all the different ſoils add one inch of very rotten horſe-dung, then trench the whole border over three or four times; the oftener the clay border is worked the better. In all of theſe preparations plum-trees will thrive and bring their fruit to great perfection.

THE proper diſtances for plum-trees are from ſixteen feet to twenty; it is much better to have fewer trees and allow them room to ſpread; they will be the handſomer, and bear a greater quantity and better fruit; for trees that are crowded produce much wood and little fruit.

To prepare the Borders for Cherries.

CHERRIES thrive beſt in a fine light rich loam; in ſuch they bear great quantities, and the fruit has a high flavour. If the

the natural ſoil be a ſtrong loam, add a large quantity of ſoft pit ſand until it is almoſt a ſandy loam: if a ſandy ſoil they will thrive tolerably well, but if three or four inches of ſtrong loam were added, the trees would be more vigorous and the fruit much larger; in a ſandy ſoil they will be ſooner ripe by ten days than in any other mould: if the natural ſoil is a light black earth it will anſwer very well. If the natural ſoil is a ſtrong loam inclining to clay, add ſoft ſand, rotten wood earth or any other light ſoil to make it light.

To all of thoſe different mixtures muſt be added two inches of very rotten dung, that has been turned ſeveral times. The whole muſt be trenched over three or four times that the border may be well mixed before planting. The diſtance for cherries of all kinds is from eighteen feet to twenty-four; this may ſeem a great diſtance, but there will be more fruit on one tree that covers twenty-four feet of wall, than

there would be on two trees ſtanding on the ſame length of ground.

THE only objection that can be made to this great diſtance is, that it will be ſome years before the wall is covered; but if the method of training the trees here directed be followed, they will ſoon cover it: however, to remove that objection, plant ſtandards between, which may run into fruit without any regard to the trees, for they muſt be cut out as the dwarfs advance.

THE compoſition for planting is, four barrows of the prepared mould for the border, to one of very rotten horſe-dung.

IN the compoſition of the mould for planting, there ſhould be always ready ſome of the prepared border mould; what is meant by that is, ſome of the mould of the border, the trees are to be planted in, after it has been trenched and well mixed: this is to be obſerved in all the different kinds of ſoils.

To prepare the Borders for Figs.

FIGS thrive only in a fine light rich earth; their large roots are long and ſmooth, and puſh out many ſmall fibrous roots which are too tender to make their way into a ſtiff mould; on this account there are little hopes of ſucceſs, unleſs they are planted in light rich mould.

IF the ground is gravelly or ſandy, the cleaning of a pond that has not been drained for ſome years, and rotten wood earth might be added, until there is ſufficient to make it light and rich.

THE diſtance a fig-tree will ſpread on a wall in proper ſoil is very great: there were ſome old fig-trees of a large ſize which covered a great length of wall in many parts of England that were greatly hurt in the year 1739.

FIGS ſhould be always planted at the diſtance of twenty feet from each other;

for if there is not room to lay in young wood, there will be very little fruit. The compoſition for planting theſe trees is two barrows of fine light mould, one of rotten horſe-dung, and one of rotten wood earth. It ſhould be obſerved that in the directions for planting mould, the quantities muſt be proportioned to the ſize of the plantation.

THE proper ſoil for an orchard is a fine light loam, they will grow and bear fruit in all good earth that is twenty inches deep, and a dry bottom.

CLAY, ſand, or gravel are very unfit to plant fruit-trees in; for though the ground be well prepared before planting, they ſoon decay.

WALNUTS, if planted for fruit, ſhould have a good, light, rich, deep ſoil. The trees raiſed in the nurſery, that have been removed at leaſt three times, are the propereſt; the top-root being deſtroyed, the

ſide-roots run horizontal, and then they bear great quantities of fine fruit.

CHESNUTS planted for fruit, ſhould be treated in the ſame manner as walnuts; but they will thrive in worſe ground.

MULBERRIES ſhould be planted on a dry light earth, not too rich; the ground all round them for ſix yards ſhould be covered with graſs; for if it is dug, they never bear any quantity of fruit, and what they do, will be very indifferent.

FILBERTS will thrive, and bear great quantities of fruit, if planted on a dry, light gravelly ſoil, and the fruit will be much ſweeter, than the fruit of thoſe planted in rich or ſtrong land. If the walks in the kitchen-garden are of the ſame ſoil with the quarters, there is no neceſſity for the borders to be very broad; but if they are leſs than ten feet, the walks ſhould be prepared the ſame as the borders, before the gravel or ſand is laid on, which ſhould not exceed four inches.

If there is a fruit wall near a manſion, it would be neater to have the gravel laid cloſe to the wall: it will be no detriment to the trees, provided the ground is properly prepared before the gravel is laid on; and once in three years it muſt be taken up to lay ſome freſh compoſt to the trees.

The preparing the fruit borders of different kinds, ſo that each ſort of fruit may have its proper ſoil, is not ſo great an expence as what is beſtowed in the common method of making all the borders in the garden equally good.

To keep the trees in heart, and the fruit in perfection, there muſt be ſome freſh compoſt laid on the borders every third year.

If theſe directions are carefully obſerved in preparing the borders, and planting the trees, there will be no doubt of having good trees and fine fruit, provided they can be kept from blighting.

There

THERE have been many things prescribed to prevent and cure blights, none of which have yet been found effectual. However, there are a variety of things that are great helps; and it is my opinion, the reason of their miscarriage is owing to the directions not being duly observed.

I SHALL give a receipt that has done great things; and where the directions have been minutely followed, have never failed, as I could hear of.

A Preparation to prevent Blights.

PROVIDE two tubs that will hold two hogsheads each, if the garden is large and a great number of trees; if a small garden, tubs that hold one hogshead each will be sufficient.

PUT into one of the tubs two pecks of clote lime; fill up the tub with clear water, stirring it up from the bottom.

NEXT day draw off the water, as long as clear, into the empty tub, fill up the lime tub with clear water, ſtir it up, and when clear, draw off as before. This muſt be repeated every day until there is a hogſhead of clear lime water.

To a hogſhead of clear water muſt be added ſix pounds of flour of brimſtone, and four pounds of tobacco duſt, which is difficult to mix the ſulphur and duſt with water: take a ſmall tub, into which put the ſulphur and duſt, add a little water, and mix them gradually, adding more as it grows wet; thus you muſt proceed until the whole is mixed: it muſt then be put into the tub of clear lime water and well ſtirred; it is then fit for uſe.

THERE is a liquid that is ſqueezed from the tobacco in preſſing, which is much better than the duſt; thoſe that are near a tobacconiſt, may get it for a trifle. One pint of it inſtead of the four pounds of duſt. A hand-engine is very proper for waſhing

waſhing the trees, but where there is not one, it may be done with a water-pot and roſe, ſtanding on a ladder.

A PECK of freſh lime added to that firſt put in, will make ſix hogſheads of clear water, which muſt be drawn off as before; the ſame quantity of ſulphur and duſt (or liquid) muſt be added to every hogſhead of clear water. The trees ſhould be waſhed as ſoon as the buds begin to burſt, at leaſt three times a week. At that ſeaſon the nights are in general froſty, therefore the trees ſhould be waſhed between ſeven and nine in the morning. When the ſeaſon is farther advanced, it will be found neceſſary ſometimes to waſh them till the beginning of June; the froſty nights being then over, they may be waſhed from five to ſeven o'clock in the afternoon.

WHEN the leaves begin to ſpread, if any of them curl, they ſhould be pulled off. This waſh is alſo good for gooſberries and

and currants; it has brought peach-trees to flouriſh that were thought paſt all recovery.

The ſoil being improper often cauſes them to blight, and to grow in ſuch a rude manner that the beſt inſtruments in pruning cannot keep them in order; when that is the caſe, the ſoil and depth of the trees roots ſhould be examined. If the ſoil does not correſpond to any of thoſe kinds directed, for the kind of fruit growing *in it*, the border ſhould be properly prepared, and if the roots have got too deep, they ſhould be raiſed.

If the roots of peaches or nectarines are too deep, and the trees above eight or nine years old, it is better to plant near one; all other kinds of fruit may be moved after bearing thirty or forty years.

Having now gone through the preparation of the borders, planting the trees, and given ſome directions to prevent their blighting,

blighting, I now proceed to the management and pruning of them.

The Management and pruning of Apricot Trees.

THE ſpring after planting apricot-trees, as ſoon as the buds begin to puſh, head them down, if the trees are healthy and ſtrong, to ſix eyes, if weak, four will be enough.

RUB off the fore-right ſhoots that are produced on the ſtock, and nail the ſide branches as ſoon as they will reach the wall.

IF the tree was left with ſix eyes, there will be at leaſt two ſhoots of a ſide; if to four eyes, two branches of a ſide, which ſhould be nailed horizontally at five or ſix inches diſtance. The latter end of October they ſhould be pruned, if they have made vigorous ſhoots, to eight, nine, and ten inches; if weak, three, four, and five, will do: they ſhould be nailed directly.

In the ſpring, when the buds begin to puſh, all the fore-right eyes ſhould be rubbed off, and the young ſhoots laid regularly in from the laſt year's wood, at five, ſix, and ſeven inches diſtance, which ſhould be nailed as they advance in length all the ſummer. It is the common method to ſpur apricots; but it is better to keep them full of young wood; the fruit is much larger, and the bloſſom is not ſo liable to be killed by the froſt in ſpring, as that on the ſpurs which is ſo far off the wall.

The next October the young ſhoots muſt be ſhortened according to their ſtrength, to four, ſix, eight, and ten inches: perhaps there may be ſome very vigorous ſhoots, which muſt be cut to eighteen inches or two feet long, if there is room to lay it in and the young ſhoots that come from it, if not cut it clean off.

In ſpring the fore-right buds muſt be rubbed off; as the tree is now large, this work muſt be performed at different times,

and

and the wood for next year laid in from time to time until the tree is well furniſhed all over. The young wood ſhould be laid in from the buds that ſtand fair, on the ſides of the laſt year's ſhoots; and none ſuffered to grow but thoſe that are laid in for wood. It muſt be obſerved, that no ſtone fruit is fond of being cut at this ſeaſon: much work may be performed in a little time by rubbing off all ſuperfluous buds. If this method is followed the tree will be handſome and produce good fruit, and will not be ſubject to gum, which occaſions the loſs of many a tree.

When a ſtrong luxurious branch is produced in any part of the tree, it is beſt to cut it cloſe off; for if it is ſhortened to produce wood, which is often recommended, it never anſwers, for the ſhoots that come from it are never good, and are very ſubject to gum.

Of

Of the Management and Pruning of Peaches and Nectarines.

In the management of peaches and nectarines there will be neceſſarily repetitions of ſome things that have been ſaid on the management of apricots and other trees; but it will (I imagine) be more agreeable as well as uſeful, to have ample directions on theſe ſubjects we are treating of, therefore I ſhall plead its utility as a ſufficient apology for ſuch repetitions.

All peach-trees, proper for planting, ſhould be young and vigorous, have only one ſtem, and never headed down until the ſpring; as ſoon as they begin to puſh, they muſt be headed down, if ſtrong trees, to ſix eyes, if weak, to four eyes: when headed, open the ground a little on that ſide next the wall, and preſs the tree gently to it, until the top where it was cut off touches the wall.

It will be of great advantage to have an equal quantity of freſh cow-dung, and ſtiff mould mixed, as thick as common paſte, and put on a thin layer all over the cut part directly; this will prevent the froſt, ſun, or wet, from penetrating the wound, and keep it from gumming, to which they are ſubject. As ſoon as the young ſhoots will reach the wall, they ſhould be nailed horizonally; all the fore-right buds muſt be nibbed off, and if the ſeaſon is very dry, they ſhould have a little water; if the trees were headed down to ſix eyes, they will produce at leaſt two good ſhoots of a ſide: the lower-moſt of each muſt be cut to ſix or eight eyes, and the upper ones to four or five the next pruning time. The trees that were headed to four eyes may have good branches on each ſide, which may be cut to ſix eyes.

In the ſpring all the fore-right ſhoots muſt be rubbed off as they appear; from the ſhoots that were cut eight eyes, three or

four good ſhoots may be laid in from each; and thoſe cut to ſix eyes, two or three proper branches may be laid in for wood; all others muſt be rubbed off, that thoſe laid in may have room to grow and the fruit to ripen: they ſhould be nailed as they advance in length, for it is very prejudicial to the young wood of peach-trees, to be blown and twiſted by the wind, eſpecially where they are ſtrong, as thoſe that are managed thus will certainly be.

In the autumn they muſt be pruned, and ſhortened according to their ſtrength; if they have thriven as they ſhould, they will be all vigorous and in great heart; but none of the branches ſhould be cut ſhorter than ſix eyes, and the ſtrongeſt to nine and ten; they ſhould be nailed as ſoon as poſſible after they are cut. The next ſpring they will bear plenty of bloſſoms, and as they are now come to a pretty good ſize, they muſt be carefully looked over, and all the branches that are not to be laid in for wood, rubbed off while

while young, that there may be no buſineſs for the *knife* at the pruning ſeaſon, but to ſhorten the branches. This is the beſt method to keep peach and nectarine trees in good order.

PEACHES and nectarines are in general long in loſing their leaves; autumn is the proper time to prune them; the trees now being large, it is neceſſary to have a full view of them before they are cut, which cannot be done when full of leaves. It is very prejudicial to the buds to pull off the leaves when green; for ſometimes the bark is torn, which often cauſes the young ſhoots to gum, and ſpoils the wood in many parts of the tree.

A PERSON with a ſharp knife will cut them off very ſoon, ſo that the whole tree may be ſeen: they ſhould be cut an inch from the bud, which will ſoon decay, and drop off without injuring any part of the tree. It is a great advantage to prune peaches and nectarines early, the young

wood then being of a ſoft nature, it has a large pithy heart, and is liable to be greatly injured by rain and froſt, if it happens ſoon after cutting. When peach-trees are cut early, the days being long, and the ſun of great force, the wounds are ſoon healed, and they are as ſafe from froſt as if they had not been cut.

All trees puſh faſt at the extremities, and none more ſo than peaches and nectarines; it is the nature of them to grow in winter, notwithſtanding the ſeverity of the cold froſty weather, in defiance of which they make an early puſh. If they are not pruned in the autumn, they cannot be done with ſafety before the beginning of March, and then the froſts are often ſeverer than they are any time in October. The extremities of the branches which are cut off in pruning, in hard winters, by the end of February are ſwelled round; this is waſting the ſubſtance of the tree to no purpoſe; neither do the buds blow

blow ſo ſtrong as thoſe that are cut in autumn.

THERE are many objections made by ſome gardeners to the pruning of fruit-trees in autumn, but they are in my opinion in general frivolous, and not worth confuting. Let the directions given be carefully attended to and they will all vaniſh. As ſoon as convenient, after the trees are pruned, let them be nailed; all their extremities bending a little to the right and left, from the middle of the tree, never allowing two ſhreads to bear the ſame way, nor permit the branch to reſt againſt a nail, for it cankers it.

THERE is many a good tree injured by being pinched in the ſhread; the beſt method is to un-nail the whole tree, and then diſpoſe of the large wood regularly all over the wall, the young wood will fall in properly of courſe.

IN the ſpring, when the trees begin to

puſh, they muſt be looked over, and all fore-right and ſide-buds rubbed off, leaving none but thoſe that are to remain for next year's wood: this can be done now with more certainty than when the leaves are farther advanced; but as many buds will puſh afterwards, this work muſt be repeated as often as there is occaſion, that is, as long as any ſuperfluous wood grows. If theſe directions are followed, they will be thriving trees, the fruit good flavoured, and but little uſe for the knife at the pruning ſeaſon.

THE thinning of peaches and nectarines is very material; on the judicious performance of this depends the flavour and ſize of the fruit. It is not the largeſt ſort of peaches that are the beſt, but a large peach of a good kind is much higher flavoured than a middling ſized one of the ſame ſort. If there are a great many ſet in cluſters, it is beſt to thin them at three different times; the firſt ſhould be when they are as large as a ſmall pea; three then may be

left in each cluſter; in twelve days time another may be taken of, and in a week after that another, always leaving the largeſt. The diſtance muſt be according to the ſize of the fruit; on the nutmeg kind two and three inches; on the early ſorts, three or four inches; on the largeſt ſorts five, ſix, and ſeven inches; nectarines do not require to ſtand ſo thin as peaches; three, four, or five inches will be ſufficient.

PEACHES and nectarines are generally thinned with the hand, but that is not a good method; for where they are ſet very thick, it is impoſſible to pull them off without damaging the ſtems of thoſe left on the tree: the beſt way is to cut them off with a ſharp knife, leaving a thin piece of ſkin on the tree, which will ſoon drop: if they are thus managed, neither the tree nor fruit is hurt, both of which often happen in the common method of thinning them. All large vegetables ought to be baniſhed from the peach borders; then two inches of the prepared

compoſition every third year will be enough to keep the trees in good order.

The firſt time the border is recruited, the compoſt uſed ſhould be the ſame as in preparing the border before planting; but in a few years it may be neceſſary to make ſome change, it being proper to keep the border to a ſtiffiſh loam.

The Management and Pruning of Pears.

In ſpring when the buds begin to ſhoot, the tree muſt be headed down according to its ſtrength; that is, four or ſix eyes. As ſoon as the branches will reach the wall they ſhould be nailed. If there are five ſhoots, which ſometimes happens (there will ſoon be a handſome tree) two of each ſide muſt be trained horizontal, that in the middle upright, that it may be ſtrong againſt the pruning ſeaſon. The tree headed down to four eyes, if it produces three good ſhoots, will alſo ſoon make a good tree: a ſhoot on each ſide muſt be

trained

trained horizontal alſo, and the middle one upright.

If the new headed tree produces only two ſhoots, they muſt be nailed a little ſloping to the right and left. If the tree with two ſhoots is ſtrong, at the pruning ſeaſon cut them to ſix or eight eyes, three or four good ſhoots may be expected from each of them the following ſeaſon; but if they are weak, cut them to four eyes: there ſhould be no more than two ſhoots from each allowed to grow. The only way to ſtrengthen a weak tree is to lay in little wood, the branches then will make ſtrong ſhoots. The reaſon that ſo few proper branches can be laid in from ſhoots cut to ſix, ſeven, and eight eyes is, that ſome of the buds are fore-right, and ſome cloſe to the wall; neither of which can be trained with any propriety.

This ſummer many ſpurs will form on the branches trained horizontal, and on the body of the tree, which ſhould not be

allowed to grow nearer on trees that bear ſmall fruit than four inches, and on trees that bear large fruit ſix or ſeven inches. There will alſo much young wood ſprout all over the old wood of the tree, which ſhould be rubbed off when young, where ſpurs are not wanted; where they are, they ſhould be allowed to grow until the wood is hardened, then broke off ſix inches from the branch it grows on, and in the pruning ſeaſon cut to one eye.

The next pruning ſeaſon the ſame method muſt be followed in every reſpect as in the former, until the wall is covered.

The horizontal branches in ſmall pears ſhould be ſix inches diſtant from one another, and in large fruit eight or nine. When the tree is formed and the ſpurs at proper diſtances, there will a great many young ſhoots ſprout out of each bunch of the ſpurs, and if allowed to grow large, will ſpoil them: they ſhould be all pulled off when young but one ſhoot, which muſt remain;

remain ; for if they are all taken off, it will cauſe ſeveral of thoſe that are forming into buds to ſhoot into wood ; this ſhoot may be ſhortened when the wood is hardened (for after that time no more wood will ſhoot) and taken off cloſe in the pruning ſeaſon.

If care is not taken the ſpurs of pears will grow large and a great way from the wall ; they ſhould be thinned to two inches diſtance, and every year ſome of the longeſt cut clean off. It would add greatly to the beauty of the fruit to thin them ; they would alſo be better flavoured ; but this muſt be performed after a very different manner from the method uſed in thinning ſtone fruit.

Pears drop very much after they are as large as peaſe, and there is no knowing thoſe that will from thoſe that will not, until they begin to ſhine, which is a certain ſign they will grow : they may be thinned by cutting the ſtalk with a ſharp knife.

knife. The borders muſt be recruited the third year after planting; for borders where pear-trees grow are in general made too free with in growing vegetables, therefore they muſt be repaired in proportion as the earth is exhauſted. The firſt compoſition that was laid on them ſhould be the ſame as that made to prepare them for planting; but as a few years working and growing garden ſtuff may greatly alter their nature, they ſhould be nouriſhed with ſuch a compoſition as will keep them as near as poſſible to a good loam, and not too ſtiff.

The Management and Pruning of Plums.

THE tree ſhould be of one year's growth from the graft, for if older they do not produce good wood when headed down, but luxuriant ſhoots and long rambling branches.

THE ſpring after planting, they muſt be headed down to ſix eyes, as moſt kind of

of plums are very free growers, and if headed too cloſe, they ſhoot ſtrong and are apt to gum. From trees headed down to ſix eyes, four or five proper branches may be expected; if five, the odd one muſt be nailed upright, and two on each ſide trained horizontal: if there are only four, one on each ſide muſt be trained horizontal alſo, and the other two inclining to the right and left, keeping the middle of the tree open; all fore-right ſhoots muſt be rubbed off as they grow, during the ſummer. Next autumn the ſhoot that was nailed upright muſt be ſhortened to ſix eyes; if very ſtrong, which it often is, it may be cut to ten eyes; if the ſhoots were carefully rubbed off in ſpring and ſummer, there would be little uſe for the knife.

The tree that had a branch on each ſide ſhortened to ſix eyes, ſhould have four proper branches of a ſide, three on each muſt be trained horizontal, the other two ſhortened to ſix or eight eyes and nailed as before

fore directed: the next ſummer it will bloſſom and bear fruit: there ſhould be as many proper branches laid in on each ſide as can be done at a regular diſtance; all fore-right and irregular ſhoots rubbed off as they appear, and none allowed to grow but thoſe deſigned for wood. Next autumn the middle branches muſt be ſhortened to produce more horizontal ones: this ſhould be repeated every autumn and in the ſpring, as many branches laid in as can be properly got, until the ſpace allotted for the tree is full; but none of the branches trained horizontal ſhould be ſtopped until they have run as far as intended.

The diſtance of the horizontal branches in ſmall plums ſhould be from three to four inches, and the ſpurs on the branches from two to three inches. On the larger ſorts the diſtance of the horizontal branches ſhould be from four to ſix inches, and the ſpurs from three to ſix. The ſpurs muſt not be allowed to grow into

into large cluſters; they muſt be thinned a little every year, and thoſe the furtheſt from the wall cut clean off.

SOMETIMES great bunches grow where the ſpurs ſprout, but that is ſeldom when the tree is well managed; when it happens they ſhould be cut clean off with a chiſſel, and ſome of the mixture of dung and earth ſpread over the wound to prevent its gumming; there will much young wood ſprout from the place next ſpring, one ſhoot of which ſhould be ſaved to procure a new ſpur. If plum-trees are managed as here directed, they will laſt long in good order and bear a great quantity of good fruit.

The Management and Pruning of Cherries.

CHERRY-TREES for walls ſhould be one year old from budding when planted; they produce much better, and make a handſomer tree than thoſe that are older.

THEY ſhould be planted in the autumn:

tumn : as ſoon as the buds begin to puſh in the ſpring they muſt be headed down to four eyes ; when the young ſhoots reach the wall there ſhould as many be laid in as can be properly trained ; that is, thoſe that come from the ſides of the tree ; for all fore-right buds and alſo thoſe between the wall and tree muſt be rubbed off.

No tree diſagrees ſo much with the knife as the cherry ; if it is rightly managed in the ſummer, there will be little uſe for that inſtrument at the pruning ſeaſon : if there are four proper ſhoots after heading, which is often the caſe, as the buds of cherries are more oppoſite to one another than in moſt trees ; one of each ſide muſt be trained horizontal, the other two more upright, but ſtill inclining to the right and left.

If it ſhould happen (as it ſometimes does) that two branches can be laid in on the one ſide, and only one on the other, cut one out, that there may be an equal num-

number on both ſides; for if the tree is ſtarted with more branches on one ſide, it will be impoſſible ever to make a handſome tree: if the odd branch can be nailed upright in the middle to ſhorten it for more wood, it will anſwer well; if the number of branches are even, the two middle ones muſt always be trained a little more upright, that they may be ſtrong againſt pruning time to ſhorten and produce more wood. The trees that have upright ſhoots in the middle muſt alſo be ſhortened; whatever number of branches are produced from thoſe that are ſhortened in the middle of the tree, an equal number muſt be laid in horizontal on each ſide; if there is an odd branch that can be nailed upright it will do, if not, let it be cut out; if the number of branches are even, the two next the middle muſt be trained more upright to ſhorten at the pruning ſeaſon for more wood. This muſt be done every year until there are as many horizontal branches as will fill the wall.

CHERRY-TREES in general produce plenty of ſpurs, but there are ſometimes ſpaces where there is only young wood which grows ſingle on the horizontal branches; this muſt be encouraged to grow until the wood is hardened; they then ſhould be ſhortened to ſix inches, and in the pruning ſeaſon cut to two eyes to produce ſpurs.

THERE are often on cherry-trees ſmall ſhoots that are full of bloſſom buds; theſe muſt be ſhortened to an inch and cut to a leaf bud.

THERE is no tree ſo ſubject to vermin as the cherry; the ſpurs generally grow in thick cluſters; grubs often lodge there and deſtroy the bloſſom before it comes out, and frequently after it blows: to prevent this, the ſpurs ſhould not be cloſer on the horizontal branches than three inches; as they grow in cluſters they ſhould never be nearer than half an inch to one another; that admits a free air all round

found the bloſſom, and there is no harbour for vermin. The ſpurs ſhould be kept as cloſe as poſſible to the wall, and when they are thinned, thoſe the fartheſt from the wall ſhould be cut off.

This management will anſwer for all kinds of cherries but the morella, which requires a very different treatment: the morella ſhould be planted and headed down in the ſame manner as the others; what branches it produces ſhould be trained regularly on each ſide at as great a diſtance as they will admit of, that others may be trained in between them the following ſummer. There are no branches to be ſhortened, but as many laid in, as properly can be to the wall, at three and four inches diſtance; which muſt be trained as horizontal as poſſible.

In the ſpring, when they puſh, the bud next the bole of the tree ſhould be laid in for wood; and at ſix inches diſtance, and continue the ſame over all the tree: they

muſt be nailed as they advance in length. The next autumn the whole tree ſhould be un-nailed, and all the branches ſpread equally: if there is not room to lay young wood in the heart of the tree, there may ſome of the oldeſt, that have bare wood, be cut out, which is all the cutting they ſhould have. They never ſhould be ſpurred, as they bear the fruit on the laſt year's wood, which being very ſmall, ſhould be laid in at three inches diſtance. They ſhould be carefully looked over in ſpring and ſummer, and all fore-right buds, as alſo thoſe that are not deſigned for wood, rubbed off; for as the branches are laid in ſo cloſe, if they are ſuffered to grow rude it ſpoils the fruit and wood for next year. If they are managed thus, they will continue long in good order, and bear great quantities of fruit.

The morella is always planted on a north aſpect, being thought fit for nothing but baking; but when planted on a ſouth wall, and they hang on the tree till they

are

are black, it is a fine flavoured fruit and has an agreeable ſharpneſs.

THE management and pruning of pears, plums, and cherries, heading them down, training the branches the firſt year, and ſhortening them at pruning time, are ſo much the ſame, that it may ſeem ſuperfluous to ſay any thing more than what is directed for pears. This might anſwer in general, but there are ſome particulars belonging to each ſort which ſhould not be omitted.

THE proper diſtance of all kinds of cherries is from eighteen feet to twenty; they bear much better ſo than when they are more crouded.

The Raiſing, Management, and Pruning of Figs.

THE beſt method is to raiſe them from layers, which ſhould be laid in the ſpring; they will be fit to plant the ſpring fol-

lowing. If a garden pot full of light rich mould was ſunk in a convenient place in the border where a young branch could be laid, it would ſoon take root, and might be cut off from the mother plant and removed into ſhelter the beginning of winter. The laying the young branch will no ways impede its growth. As ſoon as it has ſhot an inch pinch out the heart, it will produce ſeveral ſhoots, and will be a fine tree to plant next ſeaſon. The beſt ſeaſon to plant figs is the middle of March, the roots then are ſoft and ſpungy, and often miſcarry if planted in autumn, eſpecially if the winter is ſevere, although they ſhould be covered.

If the layer was in a pot, the roots ſhould be pared off, and the ball put into the ground. The layers that are upon the mother plant ſhould be planted as ſoon as poſſible after taken off, if in the ſame garden, with all their roots, which muſt be well ſpread, for they will be numerous. If they are to be ſome time out of the ground

ground they ſhould be packed in moſs, and before they are planted all the ſmall roots cut cloſe off, and the large ones ſhortened.

All the branches of figs ſhould be nailed horizontal, or they will grow too vigorous and bear little fruit. The proper time to prune them is in October. If the froſt has not deſtroyed the leaves, they muſt be cut off; the little they bleed at this ſeaſon will not be of prejudice to them.

The only pruning they require is to cut out ſome of the ſtrong old wood, to make room for young ſhoots to be regularly trained over all the tree, for on them only fruit is produced. As ſoon as pruned the late figs muſt be pulled off, and all the branches nailed cloſe to the wall, and covered before the froſt grows ſevere.

In ſummer, all the fore-right branches

and ſmall wood that is not wanted ſhould be pulled off when young, for if they are permitted to grow ſtrong they bleed much, which is a great detriment to the tree and fruit.

The Management and Pruning of Apples.

It is uncommon to plant apples againſt walls, unleſs on north aſpects, where ſometimes a nonpareil is placed to fill up a vacant ſpot.

Nonpareils and golden pippins planted on the ſouth and ſouth-weſt aſpects are ſuperior in flavour to many peaches, and preferable to moſt plums; no good garden ſhould be without a few trees in a proper aſpect.

Apple-trees planted againſt walls ſhould be young and vigorous, and have only one ſtem free from canker, to which diſtemper they are ſubject.

They

They ſhould be grafted on free ſtocks, that is, ſtocks raiſed from the ſeeds of large four apples, or crabs; but I think crabs make the fineſt trees.

The proper time for planting is in autumn, unleſs the ground is ſubject to wet in winter; in that caſe the ſpring is preferable. They muſt be headed down in ſpring, and treated in every reſpect exactly the ſame as pear-trees: although their fruit and foliage is very different, they are much of the ſame nature; the only thing in which they differ from pears is, that they are apt to have their ſpurs grow too cloſe, which cauſes green worms to lodge amongſt them and eat the bottoms of the bloſſoms; this is often erroneouſly called a blight.

Dwarf apples, round the quarters in a kitchen garden, ſhould be planted at ſix, ſeven, or eight feet diſtance, if on French paradiſe ſtocks; but if on Dutch paradiſe ſtocks they may be planted at eight,

nine, and ten feet diſtance; but theſe ſhould never be planted facing ſouth walls, even if the borders are twelve feet wide, and the walks of equal breadth. If apples on Dutch paradiſe ſtocks are planted on the borders of the quarters behind the north aſpect, and allowed to grow twelve or fourteen feet high, and the garden is of an eaſy deſcent, it will form an agreeable view in ſummer from the walks on the ſouth ſide of the garden.

When Dutch paradiſe apples are planted to grow twelve or fourteen feet high, they muſt ſtand at ten feet diſtance, and be trained to fill up the whole ſpace; but in ſo looſe and eaſy a manner that they may appear natural, and have no reſemblance of a hedge. When they are allowed to grow ſo high, there is ſome difficulty in keeping them from being naked at bottom; they muſt not be trained thick at firſt, and have ſome branches ſhortened every other year, to keep young wood in the middle and bottom of the tree;

tree; the ſpurs muſt not ſtand too cloſe, nor allowed to grow in too great cluſters.

If the apples were planted in autumn, and were fine young plants with three or four good ſhoots, they muſt be headed down in ſpring, the two lowermoſt to ſix or ſeven inches, the others to about ten or more, according to their ſtrength.

They muſt be looked over in ſummer, and no tufts of young ſhoots permitted to grow but ſingle ſhoots, and they at a proper diſtance, a foot and eighteen inches.

If they have thriven well, there will be four or five good ſhoots at a proper diſtance on each of thoſe that were headed down; and muſt be ſhortened at the pruning ſeaſon to produce more wood, that the tree may be properly furniſhed as it advances in ſize.

There is no certain rule for ſhortening the

the branches (as in wall-trees) two or three of thoſe next the root muſt be cut the ſhorteſt, to fill the bottom of the tree. The top will always be full enough, and ſhould be thinned in the pruning ſeaſon, that the bottom part of the tree may have free air to perfect its wood and ripen its fruit. Thoſe on Dutch paradiſe ſtocks ſhould be treated in the ſame manner, only they ſhould be kept thinner, as they grow much taller.

ESPALIERS are in general laid aſide; they require a great deal of labour, and are ſo ſtiff and formal that there are few good kitchen gardens now have any.

THEY hide the quarters in ſummer, although they render the kitchen garden more agreeable to walk in; but this is not to our preſent purpoſe. The kitchen garden not being a fit place for walking, unleſs to thoſe who are fond of its product, and ſeeing the things growing and brought to perfection; if the garden is kept clean

and neat, the growing of vegetables is what it is deſigned for, and ought not to be hidden.

If there are neat frames made, it is a great expence at firſt, and they are formal and ſtiff, in a few years they begin to decay, and then muſt be patched and mended; in winter they are very unſightly.

Those made with pales are the beſt; for although they are to repair every year, after the ſecond or third, it is a trifling expence, as all the work is done by the common labourers, even if the pales are bought at the deareſt market, which ſeldom happens, as they are to be had in moſt country places. In ſummer, when the trees are in leaf, thoſe eſpaliers made with pales are the handſomeſt, becauſe not ſo clumſy; and in winter the frames have no great beauty.

The trees for eſpaliers, whether apples or pears, ſhould be young plants, having the

the ſame qualities as thoſe for walls, and be treated in every reſpect the ſame, in planting, heading down, pruning, and training.

ALTHOUGH there are dwarfs, or eſpaliers, all round the quarters of a kitchen garden, it will be far from being ſufficient to ſerve a family. Thus few ſmall families have large kitchen gardens, the apples for winter, ſummer pears, and other common fruits that can grow even in a large kitchen garden, will be inferior to the conſumption of a ſmall family. A ſmall family ſhould have in ſome convenient place a few baking apples, ſummer pears, ſome of the common baking plums, a tree of baking pears, ſome damſons, and filberts on ſtandards.

THE above are neceſſary in all families; but when they are planted in the kitchen garden they entirely ſpoil the herbage. Where the family is large there ought to be a large orchard, in which there ſhould be

a quan-

a quantity of all the above fruits; to which ſhould be added, walnuts, cheſnuts, mulberries, and almonds. In the north they ſeldom ſucceed, but in the ſouthern countries they bring great crops.

CHAP.

CHAP. XIII.

Of the Ananas, or Pine-Apple.

THE culture and management of the Ananas, or Pine-Apple, is brought to ſo great perfection of late years, that it may be imagined it cannot be now improved, and may ſeem quite unneceſſary to ſay any thing reſpecting its propagation; but as there many things concerning them materially, which are unknown to the generality of thoſe concerned in pine-ſtoves, for their inſtruction I ſhall give eaſy and ſafe directions for raiſing the plants, and bringing them to fruit much ſooner than by the common method.

THE common method with the crowns is to cut off the ſoft pulpy end that is twiſted

twiſted out of the fruit, and to pull off a few of the under leaves, and lay them ſome time in a ſhady dry place to harden; then plant them in ſmall halfpenny pots, and plunge them into a bed of tanner's bark, made ready in the breeding-ſtove for that purpoſe.

It is certain that a plant lying ſo long in drying, after it is deprived of its nouriſhment (the fruit) muſt be a detriment to it, and greatly retard its growth, for the leaves become ſoft and languid like any other plant that is much dried in a ſunſhiny day; and were it not for the nature of the leaves being ſtrong, and of a very different texture from woody plants, it would ſhew its wrong treatment as much as thoſe would were they treated in the ſame manner.

The cutting off the ſoft end that is twiſted out of the fruit deprives the bottom of the plant from ever puſhing out a root, for it remains to the laſt juſt as it

was

was cut off, and the pulling of the leaves from the bottom deſtroys moſt or all off the ſmall little knobs that are formed between the leaves, and are the rudiments of the roots, all of which grow when treated in the method here directed.

THOSE alſo that are managed in the old method are very ſubject to rot if taken off late in the ſeaſon from the fruit, as then they cannot be ſo well dried; whereas thoſe that are planted in the new method are in no danger if taken off in the middle of winter, and they are no trouble, nor do they require any place to be made on purpoſe for them.

THE fruiting pines are, or ought to be, put into freſh heat in the ſpring, which will be a fine moderate warmth by the time there are any pines fit to cut; and as there is always near a foot in front of the bed between the flue-wall and the pots that ſtand in the foreſide of the pit, it will be ſpace ſufficient to hold many

crowns, though of no uſe in the preſent method, neither ſhould there be any other uſe made of it ; for if any pots were to be plunged there, unleſs they were very ſmall, they would deprive the foreſide row of heat; and if the plants in them are of half the height of the pines, they prevent the free circulation of the air amongſt the pots, which would be a great detriment to the fruit.

As ſoon as you can procure the crowns (the ſooner the better after being ſeparated from the fruit) make a whole in the bark with a ſetting-ſtick two inches deep, then put in the crowns, and make them faſt in the bark.

When the crowns have been fifteen days in the bark they ſhould have a little water once a week, and may be planted within two inches of each other, and the crown that is next the fruiting plant may be placed within two inches of it, ſo that

there may be three rows of crowns all along the foreſide.

It will be the beſt method to carry them all on as the crowns can be got, for after they begin to grow it will be of great ſervice to them to be ſprinkled over with water twice a-week, as it will keep the tan moiſt; but this cannot be done where there any plants lately planted, for if they get any water before they begin to grow it rots them. If there are any crowns that are taken off in winter, they may be planted into the bark in any place amongſt the plants where there is room and air, and not very hot, where they may remain until there are ſome young plants to ſhift, when they may be taken up and potted. The crowns that are taken off laſt in the general crop muſt not be planted in the front of the fruiting-pit, but be diſpoſed of in the ſame manner as thoſe taken off in winter; for the houſe muſt be all removed as ſoon as the fruit is cut, ſo that they would not have time to get root.

BEFORE any of the pots are removed raiſe the crowns out of the bark carefully with a ſtick, ſo as to break none of their roots. The pulpy part that was twiſted out of the fruit will be all rotted off, and the bottom will be ſmooth and ſound, and in good condition to puſh roots.

THERE will be many of the under leaves alſo rotten, which muſt be pulled off; then there will be a good ſtem, hard and ſound, with many knobs for puſhing roots; beſides there will be many fine roots which have ſtruck while they were in the bark, which will receive no check in being removed. Cut the end of four or five rows of the ſmall leaves round the bottom, that they may decay before the next ſhifting in order to get more ſtem to puſh out roots, for the longer the ſtem is the more vigorous will the roots be, and the plants will grow very faſt. Plant them into large halfpenny pots, taking care to lay the roots ſmooth, and plunge them into a moderate heat, giving them a little water

the next day, and they will require no more for ſome time.

THEY ſhould be ſhifted again into penny pots before the roots are much matted round the pots, which will be in about ſix or eight weeks. None of the roots muſt be diſturbed, but taken carefully out of the ſmall pots and planted into the larger ones, having firſt put two inches of mould into the bottom of thoſe pots. Let the mould be carefully put round the ball, ſo as not to break it, yet to make the plant faſt, ſo that there be no vacancy. Plunge them into a tolerably good heat, and give them a little water; but they ſhould have no more for a week, for pines ſhould never have much water after ſhifting, until they begin to grow again.

THIS work may be done in any of the winter months as ſafely as in the ſummer. A moderate heat, a little water, and freſh air ſhould never be omitted, if the weather is ever ſo cold, for it is againſt nature to imagine

imagine a plant can live and be in good health without freſh air. Although pines do not ſo ſoon diſcover the want of it as many other plants that are more ſucculent or ſoft-leaved, yet they equally ſuffer for want of it.

If the plants have had no misfortune and are thriving, they will require to be ſhifted into three-halfpenny pots in the month of May, when they will be ſtrong plants, and be in no danger of what the gardeners call *running* (fruiting).

I cannot ſay poſitively that this ſhifting will entirely prevent it, as perhaps a few may fruit; but I can ſay with truth, that there will not be twenty in five hundred, which is next to nothing. Notwithſtanding this, thoſe that have had a check by cold, or being too much heated, will be liable to fruit.

It ſometimes happens that old plants will not ſhew fruit at the proper time,

though they appear large and in good health. This often happens when the roots of the fruiting plants are burnt all round the ſide of the pot and go no further. There are roots ſufficient to ſupport the plant for a time; and if they do not get too much water at that juncture, having a good heat, they will ſoon puſh freſh roots, and keep growing inſtead of ſhewing fruit, which they ſeldom do until the pots are full of roots. This is the reaſon why ſome plants are ſo late in fruiting; and is alſo a convincing proof that ſhifting young plants, before the roots are matted round the pots, is a good method to prevent their fruiting.

The ſuckers ſhould remain on the ſtools, or old plants, after the fruit is cut, until the whole crop is finiſhed; then they ſhould have a good deal of water, eſpecially if there is a moderate heat in the bark. As the old plant has nothing to feed but the ſuckers, they will grow to a large ſize before all the crop is cut, which will

be about the end of September, if the plants fruited at a proper ſeaſon.

ALTHOUGH the tan is in ſeeming good order between the pots, yet underneath it will be dry, huſky, and mouldy, if the plant has had no water for ſome time before the fruit be cut; therefore as ſoon as the fruit is off it ſhould have a large quantity of water, which will run through freely, moiſten the bark, and cauſe it to ferment afreſh, which will greatly encourage the growth of the ſuckers. If they are low in the pot they will ſtrike roots and be fit to pot as ſoon as they are taken off, which may be done with ſafety, if there is a proper heat to plunge them in; for as they have been long on the old plant their ſtems will be hard and dry.

As ſoon as they get roots they are almoſt ready to drop off, ſo there will be a very ſmall wound where they are taken off the old plant, and no danger of rotting; but if there is only a few that have

roots, it will not be worth the trouble of potting a ſmall number. Cut the roots off and plant them with the unrooted ſuckers, as hereafter ſhall be mentioned. If the roots are not cut off they are apt to rot when planted in the bark, and are detrimental to the young roots when they puſh.

Some time before the ſuckers are intended to be taken off, there ſhould be a place prepared in the breeding-ſtove for their reception: the bark ſhould be trenched over, and as much new bark added as will make a moderate heat, and at the top there ſhould be at leaſt a foot of old bark without any mixture of new; and when very dry, it ſhould be watered until it is moiſt.

This ſhould be done ſeven or eight days before the ſuckers are taken off, that the heat may riſe before they are planted; for if the bark be quite cold they will be in danger of rotting; and, which is full as

bad

bad as if the heat was to be violent and ſcorch the ſtems, which would retard the plants three months, if it does not quite ſpoil them; but if only a ſmall quantity of new bark be added, there will be little danger of its being too hot.

As ſoon as the bark is a little more than milk-warm, take off the ſuckers from the old plants and plant them immediately with a ſetting-ſtick in the prepared bed, juſt as they are taken from the ſtools. They may be planted in rows at ſix or eight inches diſtance as they are in largeneſs, and four inches aſunder in the row. They ſhould be four inches deep in the bark, and if made faſt it will be of great ſervice to them to be planted that depth, for it will rot the ſmall leaves round the bottom of the plant, ſo that they may all be taken off when they are potted. Their being planted in this manner a ſmall ſpace will hold many plants, which will give an opportunity of preparing the beds for their reception when they are potted.

They muſt have no water for twelve or fifteen days after they are planted in the tan, by which time they will have begun to puſh roots; then they ſhould have a little water, if the weather is warm, twice a week; but if dull and cold, once a week will be ſufficient. When they begin to grow freely they muſt be watered frequently; and it will greatly encourage them to ſprinkle them all over once or twice a week if the weather is fine, and a good deal of ſun; but in dull days they require none, as the air is then ſufficiently moiſt.

In ſix weeks they will be fit to pot, therefore muſt be carefully taken out of the bark with all their roots uninjured; then take off the dead leaves; but care muſt be taken to pull them no higher on the ſtem than it is of a dark brown, for if they are taken off until the ſtem is white, they are in danger of rotting. All the ſmall leaves round the bottom that are not decayed ſhould be ended, to make them

them rot before the next ſhifting, that they may be pulled off to get a good ſtrong long ſtem to puſh vigorous roots.

As many of the ſuckers will be very large, and have made roots five or ſix inches long, they muſt have penny pots at their firſt potting; nor ſhould they remain longer in the bark than to make roots of that length, for if the roots are longer they muſt be either cut off or twiſted round the pot, or put into pots too large for them, all of which are very detrimental to their growth. If there ſhould be a root too long to be laid even, it is better to cut it off at a joint than to twiſt it round the pot, or to plant the ſucker in too large a pot.

By allowing the ſuckers to remain ſo long on the mother plant, they grow much faſter than if they were taken off as ſoon as the fruit was cut: they alſo harden in the ſtem, and as they grow hard, they alſo form ſmall knobs on the ſides of their

their ſtems, which puſh ſtrong roots immediately on their being planted in the bark, and the ſtem, by being hard, is in no danger of rotting.

By being planted directly when they are taken off, they loſe no time, and are not retarded in their growth, which they do when taken off and laid to dry, which is the common method of treating them.

Before they are planted the leaves are ſhrivelled, and it is ſome weeks after being potted before they recover their proper poſition. The ſmall knobs that are on the ſtems, which are the rudiments of the roots, are all dried and loſt; freſh knobs muſt therefore puſh before there can be any growth in the plants, which makes it evident that the method here directed forwards the plants almoſt a year, and is much eaſier and more certain than the common method that is in general practiſed.

Before the ſuckers are taken out of

the bark, there ſhould be a proper bed ready, and the heat pretty ſtrong; for as they are to be planted in penny pots, and the roots not ſuppoſed to reach the ſides of the pots (for reaſons before given) they will grow much better if the heat is pretty good.

As ſoon as they have been plunged a day give them a little water to ſettle the mould to the roots, and they will not require any more for ten or fifteen days; after that time they ſhould be watered at leaſt twice a week, and if the weather is dry and hot, it will greatly encourage them to ſprinkle them with water once a week, unleſs it be late in the ſeaſon, when the nights are long.

Their being ſhut up without air ſupplies the leaves with moiſture without ſprinkling, as the houſe will be ſufficiently damp all that time; neither ſhould there be any water allowed to fall into their hearts in the winter; but it is an advantage

tage to pour it in amongſt the bottom leaves, in watering, even in winter, as it waſhes out all the dirt and naſtineſs which is very apt to lodge in their bottoms, and ſometimes rots them off cloſe to the pot, or decays the plant ſo that the fruit ſtem becomes crooked, and the fruit grows defective on that ſide.

As ſoon as the roots are come round the pot, ſo that they can be taken out without danger of breaking the ball, they ſhould be ſhifted into large pots. Eight or ten weeks is the uſual time allowed them for ſhifting, but you may judge to a certainty by turning the plant out of the pot carefully, at leaſt ſo far as to ſee in what condition the roots are; for they ſhould not be allowed to remain till the roots are matted, for then there is ſo much ſmall ſoft woolly ſtuff grows amongſt the roots, which is abſolutely neceſſary to be taken off, and in doing it many of the beſt and ſtrongeſt roots may be broke, and the ball often greatly diminiſhed, which is wrong, and retards the growth of the plant.

If the woolly ſtuff is not taken off it moulds, and very often deſtroys the roots after there is freſh mould put round them, and it prevents the roots from coming to the ſides of the pots.

They ſhould be carefully taken out of the penny pots and planted in three-half-penny ones; and if the heat is declined, a little freſh bark ſhould be added and worked up with the old, which will renew the heat. This work may be performed ſafely in any of the winter months.

This ſecond ſhifting ſhould be about the beginning of December or February, according to the time the ſuckers were taken off in autumn.

This ſhifting keeps them growing all winter, and greatly prevents their fruiting; for the reaſon of many young plants fruiting is, a want of earth to ſupport their roots, want of moderate heat to keep them growing, and of water to keep them moiſt;

for

for if they are in ſmall pots, the pots are ſoon full of roots, and muſt be often watered.

If there is not a good heat they are in danger of being rotted, and if not watered they are ſure to fruit; but if they are ſhifted and kept growing, and have a good deal of air, they will be fine plants, and produce much better fruit than thoſe that are drawn tall, and to the look ſeem much finer.

About the middle of May the roots will again be all round the ſides of the pot; they then ſhould be ſhifted into two-penny pots in the ſame manner as before directed; but it will be neceſſary to examine the roots, to be certain of their being in order for ſhifting.

As the weather will now be warm, if a tolerable ſeaſon and a good deal of ſun, as ſoon as they have been plunged a day they ſhould have a little water, and in about ſix

ſix days they will require a little more, and after that they muſt be watered frequently, according to the warmth of the weather.

When the bark becomes dry at the top, it loſes its heat, therefore it would be better to water them all over with a watering-pot and roſe often: this keeps the bark in a moderate ferment, and the plants grow freely. They ſhould have a good deal of air; for if drawn at this ſeaſon they never will bring good fruit.

When two or three dull days ſhall happen together, they ſhould have ſome air every day, if it were only for an hour, although the houſe is not ſo hot as it ought to be; for as at this time of the year there is no fire, in dull weather the ſtove will be very cold, and it may be imagined there is no occaſion for air; but it is very neceſſary; and even in froſty weather, when there are fires, if the ſtove is cold, yet it ſhould have freſh air, which

ſhould be admitted by the back-doors into the ſhed.

AFTER this ſhifting they may remain longer than they did after any of the former, as they have now a good large ball of earth to ſupport them, and may now ſafely grow in the ſame pots to the middle of Auguſt, when they may be planted in the pots they are to fruit in ; at which time they ſhould have all the ſmall ſtraggling roots cut off cloſe to the ball.

THERE is a great advantage in putting the fruiting-plants early into their fruiting-pots, as there will be much fine weather after, that time (the middle of Auguſt) they may have a good deal of air while they are getting new roots ; and as the bark will be warmer at this ſhifting than after any of the former, there will be an opportunity, when the weather is fine, of giving a good deal of air, the plants will thrive, grow ſtiff and ſtrong, and produce good fruit ; and as the pots will

will be full of roots early in autumn, they will ſeldom fail of fruiting at a proper ſeaſon.

BEFORE the plants are ſhifted into freſh pots the bark-bed ſhould be worked to the bottom, all the rotten tan taken out, one third of new added, and it ſhould be well mixed with the old: this thorough ſtirring is neceſſary at this ſeaſon, that the bark may keep a moderate heat all the winter; but it frequently happens that the heat is violent for ſome time, and if the pots were plunged up to the rims it would deſtroy all the roots (and ſometimes moſt of the ſtems) which would be a great detriment to the plants, and would be a long time before they recovered; for as long as the violent heat continues they will puſh no freſh roots; and if any quantity of water is given during that time, they are in danger of rotting.

WHEN a misfortune of that kind happens, the beſt method is to take the

plants out of the pots, cut off all the rotten roots, and what is ſpoiled of the ſtem; plant them into three-halfpenny pots, and plunge them up to the rim into the ſame heat, and they will ſoon puſh freſh roots.

As ſoon as the roots are come round the pot, ſo as to be taken out without breaking the ball, they ſhould again be put into the fruiting-pots: this will retard them, but not ſo much as if they had been left in their old pots with their rotten roots, and their fruit will be better and larger. They ſhould have little water for ſome time after they are put into the little pots; for as long as the bark is very hot it will cauſe a great moiſtneſs all round the pots, which will be ſufficient for them for ſome time, as they have no roots; but when the heat begins to decline, and the roots are advanced to the ſides of the pots, they ſhould have a good deal.

To prevent accidents of this kind, the pots ſhould be plunged only half way at firſt;

firſt; and when the leaf riſes, which will be in four or five days, if it is very great, they may remain in that poſition for a month or two; but the time muſt be juſt as the violence of the heat continues.

As ſoon as the heat declines the pots ſhould be taken out, and the bark ſtirred eighteen inches deep, and the pots plunged to the top. If the bark was ſtirred any deeper it would cauſe the heat to be as great as it was at firſt, which would be a great loſs, as the pots could not then be plunged to the rims; for they always puſh fine ſtrong roots juſt at the neck of the plant, and when the pot is only half plunged they want heat to encourage them. The heat after this will remain moderate all the winter, and the plants be in a ſlow growing ſtate, ſo as to be in vigour to ſhew their fruit.

THERE is another method to prevent burning, which may be done with leſs trouble; for it is not always that the tan

heats ſo violently, and there is little danger of its ever doing ſo, unleſs the old bark is very dry and not much rotted; when that is the caſe, a very little bark will make a great heat, eſpecially if the bed is ſtirred from the bottom. The plants ſhould not be ſhifted into new pots, but removed into ſome convenient place until the bed is made ready, and then ſet level on the bark for ten days, by which time the heat will be come to its greateſt height: he plants may then be ſhifted, and plunged half way, or to the rims, as the bark is in condition. While they remain on the bark they will require water every day, if the weather is hot, and a good deal of air. They ſhould not be crouded too cloſe, but ſtand at the ſame diſtance as if they were plunged; for when they ſtand thick the leaves get a wrong poſition, and are long before they come right again (if ever) which makes them very unſightly.

When the heat is become moderate, and the plants plunged to the rims, they may

may remain in that condition to the end of February, giving them moderate waterings, and as much air as the weather will permit, keeping the heat of the houſe to a moderate temperature.

THERE are many large and fine plants ſpoiled by keeping the houſe too hot at the time of their ſhewing fruit, beſides it cauſes the fruit-bud to be ſmall, the ſtem to run to a great height, and to be ſo very weak that it has not ſubſtance ſufficient to feed the fruit.

THE beginning of March the plants ſhould be all taken out of the bed, and a little new bark added to the old, and worked up ſo as to be well mixed, to make juſt a moderate heat. At this ſeaſon, when the pots are full of roots, if the heat was too ſtrong it would ſpoil the whole crop; for ſhould the roots be now burnt, there is no recovering them.

THE dead leaves ſhould be pulled off all

round the bottom, and the earth ſtirred a little all over the top of the pot, and raiſed cloſe round the neck of the plant, and an inch of very rotten dung ſpread all over the top of the pot; for as the earth in the pot has fed the plant ſo long, it muſt be much ſpent; but the dung being waſhed down amongſt the roots with the water, it will add freſh vigour to the plants, and cauſe the fruit to grow freely.

They ſhould now be plunged to the rims, and have a good quantity of water, not too much at a time, but often; they ſhould alſo have a good deal of air, and when the weather is hot and dry it will greatly encourage the fruit, if you ſprinkle them all over with water twice a-week, which may be continued until the fruit is come to its full growth; after this they ſhould not have one drop. The fruit then cuts hard, dry, and fine, and is of a delicious high flavour; but if watered after that time, they are full of a watery juice, flat and inſipid. As they ſhew at different

different times there will be many full grown, when there are ſome not come to half their ſize, therefore it will be neceſſary to give theſe water, but the ſprinkling ſhould be given over.

The crowns which were ſhifted in May will require to be ſhifted again the beginning of July; but as it will be impoſſible to get them ſtrong enough to bring large fruit this ſeaſon, it will be better to keep them over the year, and if well managed they will be ſtrong, fine plants.

If they were to be managed in their ſhiftings as is directed for the ſuckers, moſt of them would fruit, but they would be much ſmaller than the fruit of the ſuckers; for if the fruiting-plants had no miſfortune, the ſuckers taken from them in the autumn will be larger when taken off than the crowns are now. The ſtems of of the ſuckers are alſo prepared for rooting before they are taken off the mother-plant, and grow much faſter than the crowns.

It will be much better to keep the crowns growing for another year, as they will then be ſtrong, fine plants, and will produce large good fruit.

If it is intended to keep the crowns growing when they are to be ſhifted in July, cut off all the roots round the ball, and leſſen it ſo much that there will be an inch of freſh mould all round the ball, when planted in the ſame pot they were taken out of. Plunge them in moderate heat; and two days after they are plunged give them a little water to ſettle the earth; but they ſhould have no more for ten or twelve days, by which time they will begin to puſh freſh roots, and will require to be refreſhed with water according to the heat of the weather, obſerving to give them plenty of air. They will not look ſo green and pleaſant to the eye, as thoſe plants that are kept with little air, whoſe leaves are long, ſmall, and thin, and drawn quite upright: Their leaves will be ſhort and broad, and grow almoſt horizontally.

The middle of September they ſhould be ſhifted into pots a ſize larger; but none of their roots cut off. The ball ſhould be put in whole as they came out of the other pots, and plunged into moderate heat. Little water will ſerve them in winter, having a good ball of earth to ſupport their roots, and if they are kept in a moderate heat they will grow all the winter.

One principal reaſon why many of the crowns fruit in the ſpring is, their being planted in ſmall pots to ſtand all winter, and are generally plunged into a too great heat in the autumn, which preſently fills the pots with roots: the ſtrength of the mould is ſoon ſpent, and then they have nothing but water to ſupport their roots, which if given in any great quantity, and the heat declining, they grow yellow, and ſometimes are rotted. If they do not get water, their being dry ſtops their growing, and makes them ſet for fruit, and as ſoon as they are put into larger pots and freſh heat in the ſpring, they ſhew fruit directly.

THE beſt method to prevent their fruiting is to give them only a moderate heat, and to keep them juſt moiſt; and if the heat declines any time in the winter, the plants ſhould be taken out of the bed and a little freſh bark added: this will renew the heat milk-warm, the degree of which is ſufficient for them at this time of the year.

THE beginning of March they ſhould be taken out of the pots, many of the roots cut off, ſo that there may be a ſufficiency of freſh earth round the ball when they are put into penny pots; being abſolutely neceſſary to ſhift them at this time, and to give them freſh earth to promote their growth, as that in which they have been in all the winter will be much ſpent.

IT is alſo neceſſary to plant them into leſs pots; for if they were to be put, at this ſhifting, into pots a ſize larger than thoſe they are now in (as the ball ſhould be no more broke after this) the pots they muſt

muſt be planted in to fruit, would be too large, and take up too much room in the ſtove to no purpoſe; beſides, the plants would not thrive ſo well were they in ſuch large pots. A juſt proportion between the plant and pot is neceſſary to be conſidered for the encouragement of its growth.

About the middle of May they will require ſhifting into two-penny pots, as before directed; the roots ſhould be examined, and if neceſſary, ſhifted ſooner; for the roots muſt not be allowed to mat, neither ſhould the ball be broke.

As they now will have a good ſupply of earth to nouriſh their roots, they ſhould remain in theſe pots until the middle of Auguſt, when the ſuckers of a year old are ſhifted for fruiting; and then put into the three-penny pots, and plunged in the ſame bed. As they will be much thicker of leaves than the ſuckers, it will be proper to mix them; they will look better,

and

and there will be more air amongſt the pots than if the crowns were to be plunged all together.

If they are properly ſhifted and managed as here directed (and meet with no accident) they will be ſtrong, ſhort, ſtiff plants, with broad leaves growing almoſt horizontally, and will ſhew fine fruit-buds with ſhort ſtems, and produce a large rich-flavoured fruit.

Many admire crowns, as they make the handſomeſt plants; they are much thicker of leaves than the ſuckers, and more ſightly; but if the ſuckers are properly managed they will produce as good fruit at one year old as the crowns will at almoſt three, ſo that there are two years ſaved, beſides the expence and trouble.

Should the plants which are in fruit meet with the misfortune to have their roots ſcorched, which may happen to the moſt

moſt ſkilful and careful perſon, if not very much damaged, they will puſh freſh roots and ripen their fruit, although it will not be ſo large; neither will the flavour be high, the ſuckers will be very ſmall, and not fit to produce fruit at a year old. For fear of an accident of that kind, it will be proper to have ſome crowns every year coming on of a year old, to prevent your being deſtitute of good fruit.

When a misfortune happens to occaſion the ſuckers to be very ſmall, they will alſo be very late, and ſhould remain on the old plants as long as it can be done with convenience, as they will grow much faſter on the mother-plant than they will after taken off, beſides the advantage of their ſtems being hardened. They ſhould be planted in the bark when taken off, as before directed, and managed in all reſpects as the crowns that are kept till they are three years old.

It may be objected to this management, that the frequent ſhifting will retard the growth of the plants, and that they would be much larger if they had been leſs ſhifted; granted: they would have been much taller, but would not have half the ſubſtance. A ſhort-leafed, ſtrong plant will produce much larger and better fruit than thoſe that are longer leafed; they indeed are more ſhewy to the eye, being of a darker green, and look more vigorous; but they produce ſmaller fruit: neither are they ſo high-flavoured as plants that have more air.

Having gone through the management of the plants in all their different ages, I ſhall now proceed to give ſome directions about the moulds they ſhould be planted in at the different times of of ſhifting, which has ſucceeded very well with me for many years.

To make good mould for pines, there ſhould

ſhould be in readineſs the following ſimple moulds, which ought to be compounded ſome time before they are wanted. Good light loam ſurface, that has laid in a heap till the graſs is quite rotten, and has been turned ſeveral times; rotten dung that has been turned until it is become as ſmall as mould; light rich wood-earth that has been turned four or five times; rotten bark from the ſtove, ſifted, that has laid a year, and been turned ſeveral times; and good ſharp ſand, and if the ſand was turned once or twice it would be the better.

The turning of the different moulds, before they are mixed, is of great uſe to them, as it meliorates all their different particles, and makes them fit for mixing. It ſhould be done in the winter, when there is hard froſt and no ſnow, for ſnow is very bad for all compoſitions that are not made of long ſtraw, leaves, &c. and to them it is of great ſervice. The frozen parts ſhould be turned into the middle,

and the ſmall to the outſide, that it may get the benefit of the froſt and air to mellow it; then make it into ridges of four or ſix feet broad at bottom, as there is room, and bring them to a ſharp point at top to throw off the rain, which, like the ſnow, is very detrimental to all compoſitions. In that form it is alſo more convenient for turning, and at every turning, the bottom ſhould be thrown uppermoſt.

HAVING all theſe moulds, tan, dung, and ſand prepared, a proper compoſition may be made of them for pine-apple plants of all ages. It ſhould be made up ſome time before it is uſed, and turned ſeveral times, ſo that the different kinds may be well mixed and incorporated.

MOULD for crowns and ſuckers at their being potted when taken from the tan-bed, where they were planted to ſtrike roots. ——Three wheel-barrows of light wood-earth, one barrow full of ſifted tan, one barrow of loam, half a barrow of ſand, and

and one barrow of rotten dung; this is the proportion: the quantity muſt be according to what is wanted; but it would be much better if there was as much mixed at a time as would ſerve for two or three years; for the longer all compoſitions lay, the richer and better they are; and the oftener they are turned, it adds to their fertility; for it would be poſſible to fertilize very poor ſoil by throwing it into long ridges and often turning it, which muſt be owing to the nitrous particles that are imbibed by its looſe ſurface.

MOULD for the firſt ſhifting.——Two barrows of wood-mould, two barrows of loam, one barrow of dung, one barrow of tan, and half a barrow of ſand.

MOULD for the ſecond ſhifting.—Three barrows of loam, one barrow of wood-earth, one barrow of dung, and half a barrow of ſand.

MOULD for plants that are to be planted

into their fruiting-pots; or plants that are large, and may want ſhifting out of courſe.——Four barrows of loam, two barrows of wood-earth, two barrows of dung, and one barrow of ſand.

THE crowns that are to be ſhifted in May, and to have their toots cut off round the ball, ſhould have mould a little different from any of the former, that they may grow ſtrong, and their leaves broad and thick. I have found the following compoſition anſwer well: Two barrows of loam, two barrows of dung, one barrow of wood-earth, and a barrow of ſand. This will alſo do very well for them when they are planted into larger pots to ſtand the winter.

IN the ſpring, when the ball is reduced, they ſhould have the following compoſition: A barrow of loam, a barrow of wood-earth, a barrow of dung, and half a barrow of ſand; and in their other ſhiftings the mould before-mentioned will do for them.

When fruiting-plants are damaged in their roots, ſo as to render it neceſſary to take them out and plant them into little pots, the following compoſition will make them ſoon puſh very fine roots, and in a little time they may be placed in their fruiting pots again: One barrow of ſifted tan, two barrows of wood-earth, one barrow of dung, and half a barrow of ſand.

I do not pretend (as I ſaid before) to aſſert that thoſe moulds which I have mentioned are the very beſt compoſitions for pine-plants, or that ſome other mixtures may not be as good, if not better; but I advance nothing upon credit, nor direct any thing but what I have practiſed with ſucceſs for many years, and have always found thoſe compoſitions anſwer to my utmoſt wiſhes. The plants will thrive well, and produce large fruit.

The culture of the plants has been treated of at large from the crowns being

taken from the fruit, and the ſuckers from the mother-plants, to their being put into order again for fruiting. I flatter myſelf that thoſe who follow my directions with accuracy, will find that nothing has been advanced but what is practicable, and will anſwer.

THERE may be, and daily happen, accidents that prevent the ſucceſs of the beſt-concerted ſchemes, and the beſt directions may be fruſtrated by a trifling accident or neglect, ſo that no ſcheme or directions ſhould be given up as impracticable or improper, becauſe they do not always ſucceed.

ALL thoſe that are the leaſt acquainted with gardening in general, and hot-houſes in particular, are ſenſible that under the care of the moſt ſkilful practitioners they are liable to many misfortunes, although very ſenſible how and when they happen, but too late to remedy them for a ſeaſon.

I KNOW

I KNOW of none that has been of worſe conſequence than too much heat; for, by what I have ſeen, ten places out of fifteen, where plants have been in bad condition, proceeded from too much heat and too little air, for they do not require ſo much as is generally imagined; and although the roots ſeem hard and dry, they are ſoon burnt, after which it is a long time before they begin to grow again.

WHEN the roots are burnt, the mould muſt ſuffer; it is much the beſt way to throw it away and freſh pot them. The old burnt roots that are all through and round the mould, muſt be detrimental to the young roots, if the mould was not the leaſt damaged, which is ſeldom the caſe.

THE white inſects on pine-plants are very pernicious, and have been the ruin of many plants that would have produced good fruit if they had not been infected; for when they are full of them, the fruit

never has that good flavour as when the plants are clean. Beſides the damage done to the fruit, they greatly retard the growth of the plants, and make them very unſightly.

Those that are infected, if not kept under by cleaning, will be totally deſtroyed, and cleaning them by hand is attended with much trouble, and at a conſiderable expence; to bruſh and clean them properly will take up a great deal of time; beſides in doing it the leaves are often broke and the ſides ſcratched, ſo that the leaves decay in patches, which makes the plants very unſightly: and what is worſe, after all that trouble and expence, they are as bad in a few weeks as they were before; yet, if they were not cleaned when moved, they would grow ſo dirty that the inſects would quite deſtroy the plants.

Many things have been tried, and even advertized as effectual remedies to deſtroy

deſtroy them; and all of which have been ſo poſitively aſſerted as infallible, that it may look like an impoſition on the public to offer any other remedy; but in ſupport of what I here advance, and for the ſatiſfaction of the public, I ſhall give an account of the effects of a ſure and ſafe remedy, having from repeated trials found it effectual, otherwiſe I ſhould not preſume to publiſh it.

For many years, when I lived with William Salvin, Eſq; of Croxdell, the pine-plants were every year in a moſt dirty condition, and every time they were to move or ſhift, a deal of time was ſpent in cleaning and bruſhing them; yet notwithſtanding all the pains that was taken with them they every year grew worſe: the bottoms of the fruiting-plants, when they were moved in the ſpring to ſtir the bark and add a little new to refreſh the heat, were as white as if they had been firſt wetted and then duſted with meal; and

and amongſt the white ſtuff were many of the white creeping vermin, ſome of them very large, ſome ſmall, and all the leaves full of white ſpecks.

I TRIED every thing I could imagine, but to no purpoſe; and every thing that was advertized, but without effect; therefore I deſpaired of ever finding a remedy: at laſt, however, I had the good fortune to ſucceed, and in one ſummer had not a ſingle ſpeck on them in one houſe, and greatly leſſened in the other that was ſo very dirty. On theſe I could not perform the operation that ſpring completely; but it was done in the autumn, and they were very ſoon both clean, and remained ſo. This was ſix years before I left the place, which was ten years ago, and there was no occaſion for any repetition of the remedy.

I TRIED its efficacy on ſeveral hothouſes which I had built for gentlemen, and it always ſucceeded. Some of my intimate

mate acquaintance, to whom I communicated the ſecret, for then I had no thoughts of making it public, have all tried it, and found it anſwer. Some of them, at a diſtance, have informed me ſo by letter.

I MADE an experiment at Sir Thomas Gaſcoigne's, Bart. when I came to the place, May-day, 1771. The fruiting-plants were juſt ſhifted into freſh heat, and the younger plants into larger pots; they had been cleaned before they were plunged, but there were many inſects all round the bottom leaves. I applied the remedy; they went off inſenſibly, and there have been none in Sir Thomas's hot-houſes ſince.

I ALSO tried another experiment, which is a convincing proof that none of thoſe inſects will live where this remedy is uſed. Sir Thomas had a quantity of plants (in 1772) from abroad, crowns and ſuckers, which were very full of vermin. I applied the remedy without cleaning, and planted them in the middle of the hot-houſe

houſe amongſt clean plants: they dropped off the infected plants, and did no damage in the houſe, which is a certain proof they were all killed.

Sir Thomas's ſtoves being all new, there was no place for the vermin to lodge in, neither had the infection been violent, and of ſo ſhort a duration, as two years, that the vermin were in the pots and on the plants. The houſe was not ſmoked, neither was the tan ſifted, only the mixture applied, which I did by way of preventing the ſpreading of the inſects, with an intent to go through the operation in the autumn; but as I found, long before that time, they were all deſtroyed, I proceeded no further, and have never ſeen one ſince.

The white ſpeck on the leaves of pines is the ſpawn of the white creeping inſect, and is depoſited on the leaves of the pines much in the ſame manner as the caterpillars are on the leaves of cabbages. I have viewed

viewed them in a good microſcope, and found all the parts of the vermin complete under the white ſcale, when taken off at a proper age without being bruiſed, and when they come to a certain period they force the ſcale from the leaf, and ſo deſcend to the bottom to grow to maturity.

MANY have thought the white inſects on the leaves to be inactive and not capable of moving; but that is impoſſible: they have no life at their firſt appearance on the leaves; for if bruſhed off ſoon they leave no mark on the leaves, are extremely thin, and quite dry; but when they have remained ſome time on them, they become thick in the middle, and if bruſhed off at that age, a ſoft gluey matter comes from them, which is the bruiſed inſect arrived to a ſubſtance; but the ſkin is ſo thin and tender that it is broken by a ſlight touch.

THAT they have life is evident; for where they ſtick to the leaves, although bruſhed

bruſhed off before they come to maturity, the outer rind of the leaves is eaten through, and the place becomes quite white and dry. That they fall off when come to ſuch an age is certain; for many of thoſe white ſpots may be ſeen on infected plants that have not been cleaned.

WHAT makes me ſo very particular in this is, that many people imagine the white ſpeck to be an inſect of itſelf, and the white creeping vermin to be different; but it is no more than the parent of the other that does all the miſchief, and therefore muſt be deſtroyed. As a proof that a white ſpeck is the ſpawn, there is often to be ſeen on infected plants a ſmall white ſcale on the very end of a leaf, and not another near it. No inſect can breed without ſeed, and there muſt be ſomething to form that white ſpeck. They are very ſmall at firſt appearance, and grow gradually to a certain ſize.

THE white creeping vermin may with pro-

propriety be called the pine-bug; for it lodges amongſt the bottom leaves of the plants, and in the leaſt hole or chink in the houſe. If the ſtove is old, and has been infected ſome years, there are thouſands of them, and their ſpawn lodges in the crevices and amongſt the tan; all of which muſt be deſtroyed.

WHERE there is only one ſtove, the latter end of Auguſt or the beginning of September is the only time that the operations for a thorough cleaning can be performed, as there is no making a perfect cleaning of plants in fruit.

THOSE that have breeding and fruiting-ſtoves ſeparated, ſhould begin with the young plants the beginning of March, and then the plants will not be retarded in their growth. The crowns may be put, after they are dreſſed, into the houſe that is cleaned; and the ſuckers, as ſoon as they are taken off, then there will be time and opportunity ſufficient to get the fruiting-

fruiting-houſe perfectly cleaned, which ſhould be done as ſoon as poſſible, in order that the fruiting-plants may be put into their fruiting-pots in good time.

All the young plants muſt be removed out of the houſe to ſome convenient place where they can remain with ſafety for near twenty days, for ſo long will it take to get the houſe completely ready for them. The weather at that ſeaſon being ſometimes very cold and hard froſts, they muſt be in a place where they can be protected from the inclemency of the weather, and have ſome heat. The flue of the fruiting-ſtove will be the propereſt place; and although attended with ſome little inconvenience, it will be only for a ſhort time.

They ſhould have a board ſet under them, which muſt have ſome bricks under it, to make a vacuum between the flues and the plants; for if they are ſet on the bare flues it will dry their roots too much and cauſe them to fruit. They

muſt have a little water every day while they ſtand there.

When the plants are removed, throw out all the tan, and remove it to ſome diſtance from the ſtove; then make the houſe as clean as it can be made with a bruſh and broom; after which provide three or four chafing-diſhes, into which put ſome red-hot cinders, ſet them in the bottom of the pit in the ſtove, and throw into each an ounce of rock-brimſtone broke into ſmall pieces; then ſhut up the houſe cloſe, and let it remain ſo until next morning. The ſame operation muſt be performed for three days, which will effectually kill all the vermin and their ſpawn that are lodged in the crevices of the houſe. If there are no chafing-diſhes, garden-pots will do as well.

As the ſtove is empty, it would be right to point the inſide, and point and ſtop up all the crevices in the plaiſter; but before that is done, all the inſide of the houſe

ſhould be waſhed with a ſponge dipped in vinegar, which will take off all the ſteam left on the rafters and glaſs by the ſmoke of the brimſtone.

After all the wood is painted, and all the cracks of the plaiſter pointed and white-waſhed, give the houſe a good deal of air night and day to dry the paint and white-waſhing. There ſhould be nothing put into the ſtove for ſix or ſeven days, by which time the paint will be quite dry, the ſulphureous ſmell gone, and no vermin of any kind left alive in the ſtove.

The tan that was carried out ſhould be all ſifted through a coarſe riddle, the rough put into the ſtove, a layer of new bark ſix inches thick at the bottom, then a foot of the riddle bark, and continued until the pit is full, leaving an open trench at one end; and trench the whole bed over, mixing it well; then lay it level, and let it remain ſo to heat. In about a week or ten

days

days it will come to its full heat, and be ready to receive the plants.

The reaſon for ſifting the bark is, becauſe there are many of the live vermin amongſt it that will go through the riddle with the ſmall tan, which ſhould not be uſed amongſt any mould that is for the ſtove, or where there is any heat, thoſe that are alive will ſoon be killed by the cold; but as there will be much of their ſpawn amongſt it, if uſed where there is heat they will ſoon come to life, and be as troubleſome as ever; therefore it ſhould be carried and thrown upon graſs-land, for which it is very good if the land is of a clay or ſtiff nature; but is very pernicious if of a gravel or ſandy kind. If there is no ſuch uſe for it, it may be thrown into the fold where cattle are fed, where, being mixed with the long ſtraw, it will make good dung.

The ingredients proper for killing the white inſects on pine-plants.———Four

pounds of flour of brimſtone, one pound of Scotch ſnuff, two ounces of the leaves of walnut dried and ground to powder, and finely ſifted; this is the proportion.

The quantity muſt be according to the number of plants that are to be dreſſed. Let them be well mixed; then take the plants out of the pots, cut off all their roots cloſe to the ſtem, which examine carefully, for ſometimes the vermin eat holes into it, and many of them will lodge therein.

If there are any holes, pick out the vermin with ſome ſharp-pointed thing, and fill the holes with the mixture, for there is often ſpawn in them as well as vermin.

Take ſome of the mixture in the hand and rub the ſtem well, then drop ſome of it between every leaf; take ſome of the mould that was made up for the crowns and ſuckers at their firſt potting, after taking

taking them out of the tan, and to four barrows of the earth add one pound of the mixture: let the earth be well mixed with it, and then fill halfpenny and penny pots, according to the largeneſs of the plants, and plant them, taking care to keep the plants upright after the mixture is put in between the leaves, that it may not be ſcattered. They then ſhould be plunged into the bed according to its heat, either half way or to the top; they will bear more heat than thoſe plants that have roots, and they require it to make them ſtrike.

They ſhould have no water for ten days after they are plunged; then they ſhould have a little, for by that time they will begin to have ſome roots, and the water muſt be poured ſlowly into the hearts of the plants, that it may not force out the mixture from amongſt the leaves, but carry it down cloſer to the bottoms.

After the water has been ſo poured on them for five or ſix times, it ſhould be given

more freely, to waſh out the mixture from the heart of the plant, which muſt be in about twenty days after being plunged: from this time there ſhould be no more water poured into the heart, but in amongſt the bottom leaves. This mixture will no ways hurt the leaves, nor retard the growth of the plants.

As ſoon as the roots will keep the ball together, they muſt be ſhifted into larger pots to bring them to a regular courſe; but there will be no occaſion to uſe any more of the mixture neither in the mould nor to the plant, for the vermin will be effectually deſtroyed, and never give any further trouble.

When the plants are to be plunged, the bark ſhould be ſtirred no deeper than juſt to receive the pots; for as it has been ſo lately ſtirred and mixed from the bottom, if it was now ſtirred any depth the heat would be greater than the plants could bear.

If the plants that are in fruit are very dirty and full of vermin when they are removed in the ſpring, in order to add freſh heat after the dead leaves are pulled off and the mould in the pot ſtirred at top, ſpread a little of the powder over the top of the pot, and put ſome in between the leaves, which will preſerve the fruit-ſtem from vermin, and conſequently the fruit and crown; ſo that the fruit will be clean to go to table, and many of the vermin will be killed, but the houſe will not be quite clear; for the live vermin have many receſſes amongſt the roots and bark where the infection is great, and has been of a long ſtanding.

As ſoon as the fruit is cut, take off the ſuckers, and rub the lower part of the ſtem well with the powder, putting it in amongſt the ſmall leaves at the bottom, alſo between every leaf, and into the heart; for there many of the live vermin often lodge: they then may be put into the bark in the clean ſtove very ſafely to ſtrike root.

When the plants are dirty, the under leaves of the crowns are generally very dirty alſo. When they are taken off the fruit, ſome of the powder ſhould be rubbed on the under ſides of the leaves, and duſted between every leaf, heart and all, and may then be put into the bark in the clean houſe.

When the fruiting-houſe is cleared of the fruit, it muſt be treated in every reſpect the ſame as has been directed for the breeding-ſtove, and then I am in hopes there will be an end of thoſe troubleſome vermin, which have been a great plague to Pine-plants for many years.

If any plants, crowns, or ſuckers come from abroad, whether any vermin appear on them or not, it would be right to duſt them before they are put into the ſtove. If any ſingle plant in the ſtove ſhould by any accident eſcape being cleaned, lay ſome of the mixture all over the pot and between the leaves, and the inſects will ſoon follow their companions.

WHERE there is but one ſtove there is an unavoidable neceſſity of retarding the next year's fruit, for there is no doing any thing then with the plants in fruit, but what is before-mentioned, and that is only a ſuperficial operation. It will not be ſufficient to clean plants that are much infected, for there is no meddling with the roots of plants that are in fruit, neither is there a poſſibility of fumigating the ſtove or riddling the bark, for it would keep the plants in fruit too long out of heat, and ſtunt them.

IF there is no partition between the fruiting-plants and the young ones for next year, the young ones ſhould not be ſhifted after May, but have plenty of air, water, and a moderate heat, to keep them growing all ſummer until the fruit is all cut, for then they muſt have all their roots cut off.

AS the fruit ſhould be forwarded as much as poſſible and cleared, it will be better

better to loſe a few infected fruit than be too late in getting the plants for next year cleaned and put in order, as they have all freſh roots to make; and there is no doing things effectually if any infected plants are in or near the ſtove.

THE caſe is very different in having plants that never have been dreſſed, which are much infected, in pots near clean plants, and plunging a dreſſed plant that is full of vermin amongſt them; for the live vermin, whoſe ſpawn dirties the leaves of the plants, lodge in the pots amongſt the roots and in the tan, and there is no poſſibility of being certain of coming at them with the powder. Thoſe in the pots may eſcape into the tan and ſoon increaſe their numbers, ſo that all the labour that has been beſtowed will be loſt.

WHEN a plant is taken out of the pot, and all its roots cut off, there are none of the vermin that are come to life but what will be deſtroyed; for if any of them are lurking

lurking amongſt the bottoms of the leaves, they are ſure to be killed as ſoon as the powder touches them, which is eaſy to accompliſh, as there is no ſhelter for them; but in pots of infected plants they have many receſſes, and may ſecrete themſelves ſo that none of the powder can touch them.

The powder is ſo ſtrong a poiſon for that inſect, that it ſoon kills it; and I am of opinion that in two years the moſt infected houſe might be cleaned by ſifting the tan once, and uſing the powder at every ſhifting, and putting ſome between the leaves; but this is only conjecture. Although I tried it in the ſpring moving, and found them greatly diminiſhed, I had not patience to go through the experiment, as I had got one houſe clear by the firſt-mentioned operation.

If any perſon chooſes to try the remedy in this manner, there ſhould be the ſame quantity of the mixture in the

mould as before directed; and when the plant is taken out of the pot, and the roots dreſſed, the ball ſhould be duſted all round, and then filled up with the mould, and the ſame quantity put between the leaves.

This, in all probability, would kill all the vermin that are in the pots at the time of the operation; but if the houſe is much infected there will be great quantities; and when the powder, by length of time and watering, may have loſt its ſtrong poiſonous quality, there will be many in different parts of the houſe which may increaſe and come into the pots.

This is only what ſeems probable to me, and would be a great advantage to thoſe that have only one houſe, that the plants might then be ſhifted at their proper time; but as I cannot aſſure a complete cure, only opinion, I ſhall proceed to give ſuch directions as will be effectual.

If there are a few late fruit in the houſe, it will not be worth while to wait for their ripening; a bed may be made for them in the Melon ground, which will be very eaſy. If there are any pits for Melons, fill one end the length of a four-light frame, which will hold a good many plants, with old bark from the ſtove, and if it is cold add a little new; mix them well, and ſet the frame on the top of the bark.

If the depth of the frame is not ſufficient for the height of the plants, raiſe the frame with bricks, and cloſe up the vacancy with tan on the outſide, which may lie ſloping to the ſide of the pit. Plunge the plants in the bark, cover them with glaſſes, and they will ripen there as well as in the ſtove. By being covered with mats at night they may be kept to the middle of November, by which time all that are good will be ripe.

The ſooner this is done the better; for if

if a frame or two will hold all the crop that is left, it would be worth while to clear the houſe by the middle of July (as there is no new erection nor expence, only a little labour) then the next year's plants would be very little retarded.

THE bark the plants are plunged in will be very uſeful. As ſoon as all the fruit is cut let it be ſifted, lay the round under cover, mix it with half as much new, and turn it once or twice, and it will be much better than all new to refreſh the bed the next time the plants are potted, and to fill up; for by being turned from the bottom it will be ſunk a good deal below the level of the pit.

WHEN the houſe and bed are prepared as directed for the young plants in March, and the heat comes up, the plants muſt be all taken out of the pots. The young plants muſt be treated in the ſame manner that the plants were in the ſpring.

THE

THE large ones that are for fruit next year ſhould have all the mould ſhaken clean off, and all the ſmall roots cut cloſe to the ſtem, and only a few of the fineſt white ſhort roots left on, that they may ſtand an inch or two within the ſides of the pot.

EXAMINE and rub the ſtem as before, and duſt all the roots that are left; but they muſt not be rubbed, for it would break all the young fibres and cauſe the roots to rot; yet it is neceſſary they ſhould be duſted, as there is a probability of their being infected with the ſpawn; then daſh with the hand, between every leaf, as much of the powder as a ſmall nut-ſhell would hold, and keep the plant upright after the powder is put into it.

THE mould directed for plants whoſe roots were ſo much burnt as to require ſhifting, is very proper for both old and young plants at this potting.

To four barrows of mould add one pound of the powder, and let it be well mixed. Three-halfpenny pots will be a proper ſize for the fruiting-plants, a little mould being firſt put into them. The plant ſhould be held up by the hand, and the mould put in amongſt the roots, ſo that there may be mould between them, and none of them cloſe together. They ſhould all lay eaſy, and not be twiſted, and kept an inch or two from the ſides of the pots. The mould ſhould be faſtened all round the ſides of the pot, the plant made faſt at the neck, and plunged as ſoon as poſſible.

THE day after the large plants are plunged they ſhould have a little water, which ſhould not be poured amongſt the bottom leaves, but all over the tops of the pots: they will require no more for ten days, by which time they will begin to have ſome young roots, ſo that they muſt be refreſhed with water according to the heat of the weather, and the water ſhould

ſhould be poured in amongſt the bottom leaves.

They ſhould have a great deal of air until they have got freſh roots; for if the days are hot, and they have little air, their leaves will draw up, and many of them will decay. Thoſe who have covers for their ſtoves would do well to cover them all the middle of the day; and if it is fine weather, after they have got roots and want water, it will be of great ſervice to them to be ſprinkled all over once or twice a-week.

The young plants ſhould be planted in penny and halfpenny pots, according to their ſize, and plunged into the bed; but ſhould have no water until they begin to have ſome freſh roots, which will not be ſo ſoon as the large plants, for the large plants being in larger pots and deeper in the bark, and having a much longer length of ſtem to puſh, they ſtrike root ſooner

than the ſmall plants, whoſe ſtems are ſhort and pots little.

It will be fourteen or fifteen days before they want any water, and then only a little, which muſt be poured in amongſt the lower leaves, becauſe there are no roots but what are cloſe to the ſtems, and they muſt be managed in every reſpect the ſame as the plants that were dreſſed in the ſpring.

As ſoon as the young roots will hold the ball together, they muſt be ſhifted into larger pots; the fruiting-plants into the pots they are to fruit in, and the ſucceſſion-plants into three-halfpenny pots. Great care muſt be taken not to break the ball, for that would greatly retard their growth; for as the plants are ſhifted before the roots mat, or any ſmall woolly ſtuff grows, there is no occaſion to diſturb the roots to break their ſmall fibres, which will grow as ſoon as they are ſhifted into larger pots.

THE large plants that are planted in their fruiting-pots ſhould have the ſame mould as thoſe that were before cleaned and ſhifted at the proper ſeaſon; but the young plants ſhould have that which was directed for plants at the ſecond ſhifting; and if they meet with no misfortune, their balls need not be reduced in ſpring, but only removed into larger pots.

IF they are managed as directed, the pots of the fruiting-plants will be full of roots in a little time after they are ſhifted, and produce good fruit, but will be later by a month or ſix weeks.

WHERE there is only one hot-houſe, the greateſt difficulty is the keeping the plants while the ſtove is cleaning and getting ready, for which reaſon it ſhould be done as ſoon as poſſible; for if the weather is very cold and froſty it will be very difficult. If there are but few fruit, then it is not worth making a bed for

them; it would be better to throw them away than to be too long in clearing the ſtove.

If the houſe is cleared at the latter end of July or Auguſt, the ſhed of the ſtove (as all ſtoves have or ought to have one) will anſwer very well. They muſt be left in the pots, not crouded, and have air every day, but no water; for if any water be given them, they having no bottom heat, it would kill all the roots, which would be of great diſadvantage, as then there would be no freſh roots to leave on the fruiting-plants; it would alſo turn the plants very yellow, and rot the hearts of the young plants, which are much tenderer than the large ones.

I am convinced that ſtoves which have been only a few years built, and not much infected, may be cleared by daſhing ſome of the powder amongſt the leaves, and lying a little all over the tops of the pots.

I have

I have cleared ſeveral by that method; and by following the whole of the directions the moſt infected hot-houſe will be as clean as if there never had been any vermin in it.

CHAP. XIV.

Of Muſhrooms.

TO pretend to raiſe plants without ſeed is a contradiction to nature; but what is here meant in the raiſing of Muſhrooms, is to produce them on beds made for that purpoſe, without ſpawn being planted in them, as is the common method of propagating them.

MUSHROOMS are wanted in every family, and in moſt places where there is any thing of a garden there are beds for raiſing them. In ſome places they ſucceed very well for a year or two, and then there is often a loſs for a ſeaſon, ſometimes longer.

THE getting of good ſpawn is frequently attended with great difficulty; and

and when it is got, if the bed is not in proper order to receive it, there is a very great diſappointment, which may and often happens to thoſe who are well acquainted with the different methods which are now in practice for propagating them.

THERE is no plant that is raiſed by art, where nature has given ſo many hints to facilitate its propagation, as the Muſhroom; and yet it is ſtill in its infancy. There is not in common practice (that I know of) any certain method to raiſe them ſo as ſeldom to fail of producing a good crop.

IF the beginning of the ſummer is warm and dry, and afterwards there fall kindly warm ſhowers, the fields produce them in plenty; whereas if the beginning of the ſummer is cold and wet, and afterwards becomes warm and dry, there are few or none.

On hot-beds, where cucumbers and melons have been planted, and have not been ſucceſsful, there is often a quantity of muſhrooms.

In large dunghills that are laid in the fields, where there is a good deal of long ſtraw, which has not laid wet in the fold, in a dry warm ſeaſon there will be much ſpawn and ſome muſhrooms.

In ſtable-yards, where a good many ſaddle-horſes are kept in the ſtables, whoſe litter is thrown out long, and a large quantity every day, if the ſeaſon is dry and no wet lies in the place where the dung is, the bottom of the dung will be full of ſpawn in the autumn.

If a quantity of litter, that is juſt moiſt, (four or five loads) be mixed with light loam or ſand, and thrown in a heap in a dry place, it will produce ſpawn in three months.

All theſe examples make it evident that muſhrooms may be produced without ſpawn being planted, and that they grow in places where there never were any before, as all muſt allow.

By what means this plant (if it is proper to call it a plant) grows in ſuch places I do not pretend to demonſtrate; it is certain no plants grow without ſeed: there is no new creation.

The ſeeds of muſhrooms being ſo very light, it is not improbable but that in the fields where muſhrooms grow it is carried over the whole ground, and lodged in every little hole and crevice, where it grows as ſoon as it meets with proper materials. The reaſon why muſhrooms do not grow in all the places where ſuch ſtuff lies is, becauſe it is not in proper order, being too wet or too dry, or the ſeaſon ſo cold that the ſeeds cannot vegetate.

It may have been imagined long before this,

this, conſidering the many and great improvements in the propagation of all kinds of plants, that muſhrooms would not have been forgotten; and thoſe hints that nature has given would have induced ſome of the many ingenious to attempt bringing them to perfection without ſpawn.

It was from theſe obſervations that I was encouraged to make ſome trials; and although I did not ſucceed at firſt ſo as to produce a good crop, yet I found ſomething might be accompliſhed, and by perſeverance I diſcovered a compoſition that produced finer muſhrooms, more in quantity, and the beds continue much longer in bearing than thoſe planted with ſpawn in the common way.

I have uſed no ſpawn for many years, and have never failed of a good crop. I ſhall give a full account of the method I have followed, and if the directions are obſerved accurately, can aſſert it to be a ſure way to bring them to greater perfection

tion in quality and quantity than any other artificial method I have ſeen practiſed; they are ſuperior in thickneſs to thoſe that grow naturally in the fields.

THE proper times for making the beds are as follow: to have them in winter, the beds ſhould be made the beginning of July; for a ſpring crop, the beginning of December; and to have plenty all the ſummer there ſhould be another bed made the beginning of March. Theſe three beds will produce them every month in the year.

IF the beds are made according to this new method, they laſt much longer than thoſe planted with ſpawn.

BEFORE we proceed to give directions for making the beds, it will be proper to ſay ſomething of what are the proper places for them.

THOSE that are very fond of muſhrooms in winter, may be certain of having them

in great plenty if they will be at the trifling expence of building a ſhed againſt a ſouth-wall, with a pit three feet deep and four feet broad, the length according to the quantity that is wanted. Thirty feet long will produce ſufficient for a large family.

THERE muſt be a flue all round the pit, two feet deep and eight inches wide, and a vacuum of an inch on the inſide next the bed, which ſhould be left open at top that the heat may come up to warm the top of the bed, which it would not if the vacuum was cloſe.

THE vacuum all round prevents the heat from drying the ſides of the bed; for if the flue had no vacuum, the heat would deſtroy all production for a foot round at leaſt; and when the bed is covered with ſtraw and litter (as it muſt all winter) to keep off the froſt and cold air, the ſtraw ſhould be laid all over the flue and vacuum, which will cauſe a gentle heat all over

the top of the bed, and greatly encourage the growth of the muſhrooms.

THERE will be no danger of the ſtraw firing, as very little heat will be ſufficient to keep the muſhrooms growing.

WHERE there is a hot-houſe for pines the ſhed will anſwer pretty well for making a muſhroom-bed for the winter and all the ſeaſon. As the fires are kept on they will grow very well; but it is too cold for the ſummer's production, for they love the glaſſy heat of the ſun, or an artificial one, although they cannot ſtand its bright rays.

IN winter they will grow in dry cellars and produce a good crop; they will alſo thrive extremely well in the end of a ſtable where there are a good many horſes kept. They will thrive and produce a great crop in a ſhed facing the ſouth, from the beginning of April to the end of September; but will produce nothing in winter

ter, as the air is too cold for them, although the bed be covered ever ſo well with ſtraw and litter.

THE materials and method of making the beds, either for winter or ſummer, or which of the above-mentioned places they are made in, being the ſame, I ſhall only give directions for making that in the fluid pit for winter uſe.

THE middle of June provide ſome freſh litter from the ſtables; a bed thirty feet long and four feet broad will take ten cart-loads: it muſt not be what has laid long and is turned black; but if mouldy and long will anſwer very well to mix up with ſome freſh, at the rate of three parts freſh to one of mouldy. Throw it up in a heap under cover, for it muſt get no wet, and let it remain for eight days, by which time it will have a gentle warmth, and it is then fit for uſe. Get ſome freſh tanner's bark; a thirty-feet bed will take three large cart-loads.

It ſhould be laid in a heap under cover ten days at leaſt, for bark is much longer in heating than dung; when it has been in the heap ſix days it ſhould be turned over, that the outſides may be in the ſame condition as the middle; for the outſide of bark never heats when it lays in an open heap; when it has juſt come to a moderate heat after turning, it is in order for the bed.

Old bark from a pine-ſtove that is dry and round will anſwer, if it is watered a little and thrown into a heap to ferment; but it is not ſo good as the new; it was from ſuch I had the firſt ſucceſs. I then mixed it with an equal quantity of new, and it anſwered much better than when it was all old; but there being a diſadvantage in taking ſo much round bark from the ſtove, I tried all new, and found it much better than either of the former.

At the ſame time there ſhould every day be ſaved from the ſtable the horſe-droppings,

pings, which ſhould be kept as whole, dry, and clean from ſtraw and hay as poſſible. They ſhould be laid under cover, and ſpread two inches thick. The place where they are laid ſhould be airy and dry, for the drier they are when laid on the bed the better. If they are got before any of the other materials, and kept dry and not moved, they will be no worſe.

To make the bed put a layer of the dung that was ſhaken up, two feet thick, the breadth and length of the bed; it muſt be made very equal, and pretty firm, but not trod; then a layer of bark, four inches thick; over that a layer of the ſame dung, a foot thick; and on that a layer of bark, two inches thick; and on that ſix inches of the ſhorteſt of the dung that was thrown up, which finiſhes for the preſent.

When the bed has been made ten or fifteen days it will then have a gentle heat; lay another layer of bark, two inches

inches thick; and on the top of that a layer of the horſe-droppings, three inches thick (they ſhould be taken up carefully and as little broken as poſſible); and on the top of the droppings an inch of the ſhorteſt of the dung from the heap that was ſhaken up. This finiſhes the bed.

The bed ſhould remain ſo for ſix or eight weeks, by which time it will have a moderate heat, if all has ſucceeded as it ought, and will be fit to lay the mould on. It ſhould be juſt milk warm. The mould ſhould be laid on three inches thick, but muſt have no water, until, upon examination of the mould, there appear little white ſtrings amongſt it, which will be in about three weeks after.

It muſt then have a little water once a-week, and if it was made milk-warm, or taken out of the ciſtern in the hot-houſe, it would be much better. In about three or four weeks after the white ſtrings appear, the muſhrooms will begin to come;

the bed ſhould then be refreſhed with water often, but not much at a time; for if there is much given at once it will kill all the muſhrooms that are above ground, and greatly damage the bed.

A BED thus made will continue to bear very plentifully for half a year, ſometimes a whole year, and produce much finer and larger muſhrooms than any of thoſe that are produced in the fields.

THE mould proper to lay on the bed is two parts of very rotten dung ſifted, two parts of fine light loam, and one part of rich black kitchen-garden mould broken fine, and all well mixed.

IF a winter-bed, it muſt be conſtantly kept covered with dry litter three inches thick; firſt ſhaking all the dung out of it; and then three inches of clean white ſtraw, and a gentle fire kept when froſty and cold weather, or when there has been long dull rainy weather, which is very

very prejudicial to them; for they rot as they come out of the mould.

In ſuch weather it would be very proper to take off the litter, and lay on the ſtraw next the bed, as by that means it will admit a free air and prevent mouldineſs; but in froſty weather the litter ſhould be next the bed.

If the winter-bed is made in the ſhed of the pine-ſtove, it ſhould be made at the ſame time and manner as the other, covered with the ſame ſort of mould, and managed in every reſpect the ſame. But as there will be two fires in the ſhed all winter, which will keep it warm, there will be no occaſion to lay any litter, only a very thin covering of ſtraw.

The bed muſt be made againſt the north wall of the ſhed, for the ſtove-wall would be too hot. The foreſide of the bed will dry much faſter than that againſt the wall, and muſt have a little water oftener, for

a very little will ſerve the backſide, as a great dampneſs comes through the wall, eſpecially if moſt of the ſhed is under ground, as it generally is.

THOSE that have no ſhed with a pit, nor a ſtove-ſhed to make a winter-bed in, may make them in a dry cellar, at the inſide end of a warm ſtable, or in the corner of any outhouſe where there is a conſtant fire.

THERE will be no occaſion for any cover in a cellar in winter, as there is no cold air; and in a ſtable the air is both damp and warm: they will require little water in a cellar, and hardly any in a ſtable. If in a houſe where there is a conſtant fire, they will require a little water but no cover. In all the places where they are made, they are all of the ſame materials.

THOSE that chooſe to have muſhrooms in the ſpring and ſummer only, ſhould make a bed the beginning of December,

and

and it will come into bearing the end of March or the beginning of April, and will produce great plenty all ſpring and ſummer.

THEY ſhould be under cover facing the ſun, but never expoſed to its rays, nor to rain; for it is impoſſible to manage a muſhroom-bed right where it is expoſed to rain: no covering of mats or ſtraw is ſufficient to protect it.

SUPPOSE the bed had been watered in the morning, and in the afternoon a ſtrong thunder ſhower ſhould fall, it would go through all the covering, and perhaps deſtroy the bed entirely. Many a good bed in full bearing has been ſo ſpoiled by ſuch an accident, that it never produced a ſingle muſhroom afterwards.

IF a ſhed with a pit thirty feet long has the fire-place in the middle on the back-ſide, and made to draw both ways, and to come up the middle to divide the pit

in two, and one of the ends made every June, there would be ſufficient for a middling family all the year.

When an old bed is deſtroyed, if it has worked kindly and been managed well, the tan that was laid above the firſt layer of dung will be very dry, white, and mouldy, and ſhould be ſaved, it being exceeding good for laying two inches thick on the new bed, below the three-inch layer of horſe-droppings: it will cauſe the bed to bear three or four weeks ſooner, and the muſhroons to be much larger and thicker in the fleſh; for the whole top of the bed will become one ſolid maſs of ſpawn.

When the old beds are pulled to pieces there will be much fine ſpawn in them; but let not that tempt any one to lay it on the new bed, for it will entirely ſpoil it. Although by ſuch means you might get muſhrooms rather ſooner, they would be ſmall and bad, for the waterings that would

would be neceſſary to bring theſe bad muſhrooms forward would prevent the production of any new ſpawn.

BEDS made in cellars or houſes where fires are kept, and in ſtables, will not produce muſhrooms all ſummer; for as the weather grows warm the air in the cellar grows cold, and the beds in the ſtables will be too moiſt if horſes are kept there all ſummer, and too cold if there are none; ſo that after April there will be few muſhrooms on any of them.

MUSHROOM-BEDS made after the manner here directed are far ſuperior to thoſe made in the common way; they produce much finer muſhrooms, laſt much longer in bearing, and have greater quantities on them at a time.

I HAVE gathered great quantities of muſhrooms from beds made according to this method, which were much whiter than thoſe gathered in the fields, a great

deal firmer, and when they were as close as the ſmalleſt buttons that grow natural, many of them were four and five ounces weight.

If all be managed as directed, you will be ſure of ſucceeding; but if any one ſhould fail, let him not deſpond at the firſt trial, there being a poſſibility of erring, though no great probability, for I have not omitted the leaſt article in the preparation of the materials, making and managing the beds: but information from books written with the greateſt candour may be difficult, until a little practice renders it eaſy.

CHAP.

CHAP. XV.

On Aſparagus.

THE common method of managing Aſparagus beds is ſo well known, that it is not neceſſary to ſay any thing on that head; but there are ſeveral places in England that are remarkable for having larger aſparagus than the common run of the country, as Batterſea and Graveſend, near London, which ſome may attribute to a different management, which is not the caſe, but the goodneſs and depth of the ſoil.

I THINK that Pontefract, in Yorkſhire, is greatly preferable to the above places in the goodneſs of its ſoil, and might produce larger aſparagus.

THE

THE largeneſs is the thing ſo much talked of at the above places, for I never heard that the beſt judges ever aſſerted that it was any ways ſuperior in taſte to thoſe raiſed in other parts of the kingdom.

THE ground in the above places is not all of the ſame kind; that at Batterſea is a loam of a great depth; the ſoil at Graveſend is very light and ſandy, and alſo very deep.

THE ground at Pontefract is richer, deeper, and finer than either of the above; it alſo inclines to a brown ſand, is the beſt ſoil I have ever ſeen, and I am confident, if the aſparagus beds were managed as they are near London, they would produce much larger than any in the kingdom in the common way.

I HAVE ſeen and taken notice of the dreſſing of the aſparagus beds at Batterſea and Graveſend, but cannot ſay there is any material difference in their method from

from the general run uſed about London, only they lay a deeper cover of earth than is commonly practiſed in moſt places, the reaſon for which is, that their ſoil is lighter.

As I ſee ſo little difference in the method of the culture of aſparagus in thoſe two places, from that of their neighbours, I can attribute their ſuperior ſize to nothing but the ſuperior goodneſs of their ſoil.

It is evident that the ſoils of the above-mentioned places, notwithſtanding their difference, are all very good, and produce fine aſparagus, which is a plain demonſtration that there are different ſoils, that the ſame ſort of ſoils may be planted in, and that they will thrive equally well in them all, which is a thing that ſhould be paid more regard to than generally is the caſe.

It is a general error in writers who treat

treat on theſe ſubjects, to mention only the ſoil that ſuch and ſuch plants will grow the beſt in, and that in ſuch a manner as to leave their readers to think that they will not grow at all in any other kind of ſoil, which often diſcourages people from ſowing or planting many different kinds of roots, ſhrubs, and trees, in ſoils where, though they do not attain to the greateſt perfection, they may become very uſeful, profitable and ornamental, and ſometimes to as great perfection as they do in that ſoil which was thought peculiar to them.

ASPARAGUS will thrive in all light, rich, deep ſoils, and all ſandy ſoils may be made rich with rotten dung, ſo as to produce very good aſparagus; and in every place it is planted in, if it is not light and rich by nature, it muſt be made ſo by art; ſo that there is no place in England but where good aſparagus may be had, and at no great expence, as there are few places but where the proper materials may be had

had to make ſuch a ſoil, which is what I ſhall give directions for in the common as well as the new method, for growing it to a very large ſize.

As the largeneſs of aſparagus is what is greatly admired, it may be brought to grow to a very large ſize in every gentleman's garden; but many will object, eſpecially thoſe who have ſmall kitchen-gardens, and have little ground to ſpare, that it takes a much greater ſpace than in the common method; yet I do not know, if the product was to be weighed, but that the largeneſs would make up for number, though I have not as yet tried that experiment.

In any part of the garden where no wet ſtands in the bottom (for where water ſtands aſparagus will never thrive, as it kills all the roots in winter, they ſtriking down to a great depth) make a trench two feet broad at three feet diſtance from the border; three feet from that another; and

ſo on for as many rows of aſparagus as are intended to be ſown.

Dig and carry all the earth out of the two-feet trench, which may be diſpoſed of in different parts of the garden where the ground is low. The trench ſhould be two feet and a half deep at leaſt.

If the ſoil in the garden will not allow ſuch a depth, ſome of the earth taken out of the trench may be laid on the three feet between the trench to heighten the ground, for it will not be very material though the ground be a foot higher than the other parts of the garden; but the bottom of the trench muſt not be dug lower than the other parts of the bottom.

Lay in the bottom of every trench three inches of good rotten dung, to which add three inches of the natural mould, if it is light; but if of a ſtiff nature, none of it ſhould be put in. If there is any mould added,

added, mix the dung and mould well by pricking it over three or four times with a ſpade.

THE proper time to do this work is the beginning of February, that the mould which is laid in the trench may be well ſettled before the middle of March, which is the proper time to ſow the Aſparagus.

THE ſummer before this is intended to be done, the compoſition for filling the trenches ſhould be prepared, and turned ſeveral times, that it may be well mixed and incorporated before it is uſed.

THE materials of which I have made the compoſition, with the greateſt ſucceſs, are as follow: Sludge from a river that runs ſlow and is muddy; but the beſt is where the tides flow and ebb; though if neither of theſe can be got, the ſludge from the bottom of an old pond that has not been cleaned for a long time will anſwer very well.

LIGHT

LIGHT peat-mould that lays at top and is very ſoft; if it is difficult to get, as it is in many places, the bottom of wood-ſtacks, or the places in woods where much leaves and ſticks have rotted, the light mould to be got there will do. Light rich loam from a common paſture. Fine rotten dung that has laid two years, and has been turned ſeveral times, and reduced to a fine mould. Sharp ſand from a pit, or river-ſide, which is better. Theſe are the ingredients.

THE quantities of each, to make a good compoſition, are two loads of ſludge, one load of ſoft peat-mould, a load of loam, two loads of rotten dung, and two loads of ſharp ſand. This is the proportion; the quantity muſt be according to the number of rows of aſparagus to be ſown. If the ground, where the ſeminary is to be made, is of a light nature, there ſhould be two loads of loam and one of ſand; but then there muſt be more of the natural earth and more rotten dung laid in the bottom.

Aſparagus will thrive exceeding well in this compoſition, and grow to a great ſize, beyond what can be imagined. The trenches ſhould be filled with the prepared ſtuff as ſoon as they are dug out, which ſhould be laid in lightly, and within three inches of the top, that it may ſettle equally; it ſhould be a foot below the level of the ground between when the ſeeds are ſown. Make a drill in the middle of the trench two inches deep, and at a foot diſtance drop four good ſeeds an inch from one another; preſs them gently into the ground, and cover them with mould two inches deep.

If all the ſeeds grow, leave only two of the beſt; and if the ſpring and ſummer be very dry, give them a little water once a week, and keep them clear from weeds. If a thin cover of moſs was laid round them, it would prevent the ground cracking after watering.

In the autumn, when the ſtems are decayed, cut them off two inches from the ground, ſtir the ſurface gently that the crown of the plant may not be hurt, and then lay on an inch and a half of the ſame compoſition that the trenches were filled with, the whole breadth of the two feet, raiſing it a little higher in the middle to carry the wet off the crown of the plants.

It will be neceſſary this winter to cover the whole two-feet trench with light litter from the ſtables, as the roots are near the ſurface; but this is no more to be practiſed. This finiſhes the firſt year's work.

The beginning of March take off the litter, and dig it into the three-feet left between the rows; prick up the ſurface in the trench where the aſparagus is ſown, and lay over it an inch more of the ſame compoſt it was ſown in.

There ſhould be as much of the compoſition

poſition made at firſt as will fill up the trenches at leaſt two inches higher than the ground between, which ſhould be turned over twice a year, for it will be three or four years before it is all uſed. It is quite unneceſſary to repeat the keeping clean from weeds, as that ſhould be always underſtood.

In the autumn, when the ſtems are decayed, cut them off four inches from the ground, and lay over the whole trench four inches of the compoſition, raiſing it a little round in the middle.

The crowns of the plants will now be near eight inches below the ſurface, ſo there will be no occaſion for any long covering; but as the plants are ſtill in danger from froſt, it will be right to cover them a foot wide with two inches of ſharp ſand, which ſhould be laid round to carry off the wet in winter, to prevent its hurting the buds. This finiſhes the ſecond year's work.

In the ſpring the ſand ſhould be ſpread all the breadth of the two-feet trench, and two inches of the compoſt added to it; then prick it over with a fork to mix it well with the ſand. This work ſhould be done the beginning of March, and let lie until the end of April before it is raked.

In the autumn there ſhould be four inches of the compoſt laid all over the trench that the aſparagus is ſown in, which ſhould be two inches higher in the middle than at the ſides, ſo that the crown of the roots will be a foot under the ſurface, and there will be no occaſion for any further cover to keep out the froſt. This ends the third year.

The next ſpring fork the rows, and let them lay a month before they are raked. This ſpring the heads will be large and fine, and there will be great temptation to cut, but it would be much better to defer it until the ſpring following.

The next autumn there ſhould be four

inches of the compoſt laid all over in the ſame manner as before, ſo that now the two-feet trench will be an inch or two higher than the ground between.

As the roots will now begin to come to the hard ground between the rows, there muſt be ſome proviſion made to encourage them to ſpread, that they may grow ſtrong and ſupply the buds, which will now be very plentiful and very luxuriant.

Any time in the winter there ſhould be a trench opened at the end of the three-feet between the rows, the ſame depth that the aſparagus was ſown in. If the ground is light and tolerably good, only a third of the natural earth ſhould be carried off; but if ſtiff, one half at leaſt.

There ſhould be ſix inches of good rotten dung laid in the bottom, then eight inches of the natural mould, and on that a

layer of dung, and ſo on until the ground is four inches higher than the ground the aſparagus is in, for it will ſink to its own level. If the ground is ſtiff there ſhould be leſs mould laid above the dung, and an inch or two of ſand added; then it will be neceſſary to mix each layer of dung, ſand, and mould, by pricking it over twice with a fork.

The next autumn there ſhould be four inches of the compoſt laid over the trench, which then will be juſt ſo much higher than the ground between. If there is any of the compoſition left it may be laid all over the ground; but if there is none, an inch of rotten dung will anſwer as well.

In two years after this it will be neceſſary to ſpread an inch of rotten dung all over the ground in autumn, and fork it in, taking hold of the ground three or four inches, and let it lie rough all winter; but the middle of the row, where

the aſparagus is ſown, ſhould always be higheſt, and lie round. This ſhould be repeated every third year; and by being thus managed the aſparagus will laſt for twenty years, and be much larger than what is ſown or planted in the beds in the common way.

As to the proper age to cut aſparagus, there ſhould be none cut before the third year; but as the intention of ſowing and managing it in this manner is in order that it may be very large, there ſhould be none cut before the fourth year; and none even then but a few of the largeſt heads, which will give it ſtrength to grow to the ſize intended.

The many directions here given may ſeem tedious, and to require ſo much labour that it is not worth the trouble: there is not a great deal more than generally is uſed (or ſhould be) in preparing of ground for planting in the common way, as trenching and dunging is always

practiſed; for after the trenches are emptied and filled again with the compoſt, there is much leſs labour in the dreſſings than is uſed in the common method. But, as this is a new way, I have not omitted the minuteſt article in the directions, by following of which, aſparagus will be brought to a ſurprizing largeneſs.

I HAVE often heard gentlemen complain that they could never have good aſparagus in the common way, their ſoil not being fit for its production: this does not come within my province; but for the advantage of ſuch as are ſo ſituated, I ſhall lay down a method, by following of which good aſparagus may be obtained, let the natural ſoil be what it will.

A CLAY bottom is very bad for aſparagus; therefore where that is the caſe, in all the ways of ſowing and planting, it will greatly add to its growth to lay two inches of coarſe gravel, or ſome ſtones broken very ſmall, in the bottom of every trench.

THE bottom ſhould be very even, and have a good fall to carry off the water (if clay); for if there is not a free paſſage it rots the roots of all plants that are permanent, and it affects none ſo much as it does aſparagus; ſo that unleſs the ground is dry at the bottom, and of a good depth of ſoil, all endeavours to have it good will prove in vain.

ALL the beſt aſparagus grows in light ſoils. If the ground is naturally ſtiff it muſt be made light; for which purpoſe there ſhould be as much ſand and coal-aſhes, finely ſifted, mixed up as will make at firſt laying twice as many inches as there is of the natural ſoil (for ſand and aſhes will not raiſe the ground in proportion to what is laid in, when well mixed with the mould); the ſand ſhould be the ſharpeſt that can be got; for ſoft ſand, laid in ſtiff clay, only binds it faſter.

MARK out the ground that is intended to be ſown, and open a trench as deep as the

the ground will allow; lay in the bottom ſix inches of good ſoft cow-dung that is not rotten, but has little ſtraw amongſt it; then ſix inches of the natural ſoil, and on that ſix inches of the ſand and aſhes, which ſhould be well mixed (but the dung ſhould not be diſturbed); then lay on three inches of rotten dung, three of mould, and three of the ſand and aſhes, which ſhould be all well mixed; then three inches of mould, two of dung, and four of ſand and aſhes, all well mixed; let them remain thus until ſowing time. This ſhould be done the beginning of winter, and it will be in fine order, and bring very good aſparagus.

It ſhould be ſown in drills two inches deep, and covered with an equal quantity of rotten dung, ſand, and good light mould, well mixed.

The beds ſhould be covered with light litter the firſt winter; the ſecond, with two inches of rotten dung, which ſhould be

be forked up, and mixed with the earth on the beds in the ſpring; the third winter there ſhould be a good covering of dung, ſand, and good light earth laid all over, which will be ſufficient to keep out the froſt.

THERE ſhould never be any thing planted in the alleys, neither ſhould they be deep; but the beds ſhould be laid round, the alleys dug every winter, and ſome earth thrown over the beds out of them, the moſt of which will be raked off in dreſſing.

THEY ſhould have at leaſt an inch of rotten dung thrown over them every third year, which ſhould be forked up in the ſpring, taking hold of three inches of the mould on the bed. This ſhould be done the beginning of March, and lay rough until the beginning of April before it is raked.

IF the ground intended to be ſown be gravel

gravel or ſand, a fine rich loam ſhould be uſed inſtead of ſand and aſhes; but rotten cow-dung will anſwer better than horſe-dung; and if all the layers of dung, except the laſt, is not ſo very rotten it will be the better.

After all the ground is trenched and well mixed, there ſhould be an inch ot very rotten dung, two of loam, and one of good black mould, laid all over, and pricked over at leaſt three times, that they may be well mixed. This work ſhould be done in the beginning of winter, and by lying rough it will be in good order for ſowing in the ſpring.

If the natural ſoil is either a light loam or a fine black mould, there will be no occaſion for any thing except dung; but in all ſorts of ſoils there ſhould be a good layer of dung in the bottom of the trench, as the lower parts of the beds cannot be mended after the aſparagus is ſown; and when the roots get to the bottom (as they

they ſoon will) they will grow ſtrong, and greatly increaſe the growth of the plants.

It is a wrong method to plant aſparagus, for the roots ſhould never be cut, becauſe they are of ſuch a nature that they never make ſo good roots as when they are ſown where they are to remain.

It is natural for aſparagus to riſe in the crown as it grows old, for which reaſon there ſhould be a good covering of earth laid on at different times, that it may be in a condition to reſiſt the froſt without a covering of long dung, which is very prejudicial to it, eſpecially on ſtiff land. Thoſe who prepare and manage their beds thus will have good aſparagus, let the natural ſoil be what it will.

Asparagus draws a great deal of nouriſhment from the ground every year; it is a very luxuriant plant, and ſhould have ſome ſupply every other year, or it will in a few years be very ſmall; but if properly

ſupported it will be very good for many years.

FORCING aſparagus, and having it in the winter months, is much in practice: it is ſometimes (when the plants are good) pretty large, and looks tolerably well, but it is impoſſible it can be good; for the buds are forced out by the heat only, without having any ſupply from the roots, except what juices were in them; and they ſtrike no new fibres, therefore can draw no nouriſhment from the mould they are planted in; for when the buds that were formed before planting are all ſhot, there is an end, and the plant decays.

GOOD aſparagus may be obtained at a trifling expence, from the beginning of March until the beginning of May, of a fine colour and good taſte. This is no part of what I propoſed to treat of; but, as it is not in common practice, I ſhall give directions how it may be brought to perfection.

BUILD

BUILD a pit thirty or forty feet long, ſix feet broad (inward dimenſions) and three feet high. Before the flues are begun the foundations ſhould be laid two feet four inches broad; that is, eight inches for the flue, four inches for its inſide ſupport, and ſixteen inches outſide wall, which may be built either of ſtone or brick, as moſt convenient; but the ſupport and cover of the flue muſt be brick.

WHEN the wall is three feet high all round, begin the flue, which ſhould be two feet deep; and after it is covered ſhould have ſix inches of ſtone or brick built over it before the caping is laid on.

IF the ground this pit ſtands on be clay, there ſhould be a foot of looſe ſtones broken ſmall, ſpread all over the bottom, and on that a foot of bruſh-wood, cut ſmall, and a drain through the wall at the bottom, to carry off the wet; but if it is ſand, gravel, or rock, two feet of bruſh-wood will be ſufficient without a drain.

THE fire-place ſhould be ſunk a foot lower than the bottom of the pit, to give room for an aſh-hole below the grate, and ſufficient height to the fire-place, that there may be a riſe of eighteen inches at leaſt before the flue comes to the level, which ſhould go all round, and the chimney ſtand over the fire-place, which ſhould ſtand without the ſquare of the pit.

THE flue at firſt ſhould go along the end, and be carried within four inches of the outſide of the wall, to prevent its being too hot at firſt going off; but ſhould, as ſoon as paſt the end, be brought gradually into the ſquare, to have only the four inches ſupport the remainder of the way round.

WHEN the whole is finiſhed, and the bottom prepared according to the ground it ſtands on, the pit ſhould be filled with the ſame compoſition that was made for the trenches for large aſparagus. This ſhould be done at leaſt two months before the

the time of ſowing; for it will ſink greatly, and it ſhould be juſt a foot below the caping when the ſeed is ſown.

It may be ſown thicker than that in the trenches; but five rows will be ſufficient in the ſix-feet bed, as the rows on the outſide next the flue muſt be at leaſt eight inches from the flue, for the heat will dry the roots too much if nearer.

The firſt year after ſowing it ſhould be covered with litter, in the ſame manner with that ſown in the trenches; and managed, as to covering, with the compoſition, after the ſame manner (which need not be repeated). When it is finiſhed, which will be the third year, it ſhould lay round the ſides, next the flue, an inch above the caping, and the middle four inches higher.

It ſhould not be forced before the fourth year. The fires ſhould be made the beginning of February, but very ſlow at firſt,

and increaſed gradually. If the ſeaſon is not very ſevere there will be aſparagus fit to cut the latter end of March.

THERE ſhould be a wood frame made like that which ſupports the tilt of a waggon laid over, that it may be covered with mats at nights and in cold wet days.

WHEN the fires are made ſtrong it ſhould have a little water all round the ſides next the flues every day, and the whole bed ſhould be kept moderately moiſt.

As the forcing will waſte the aſparagus much more than that which grows in common ground, theſe ſhould have a little rotten dung laid over them every year, and it would be proper to provide two ſuch places in order to have a conſtant ſupply; for if it is forced every year it will not laſt a long time, as the heat will force all the buds to ſprout; ſo that it ſhould have reſt every other year to recover ſtrength.

THE

THE forcing of aſparagus in the winter months, by planting it on hot-beds made of dung, is brought to as great perfection as it can be, unleſs a better method be found, that it may have the advantage of roots and fibres to encourage its growth, as well as heat to force the buds to ſhoot, which I hope to accompliſh.

WHERE tan can be conveniently got, it makes a much better bed for forcing winter aſparagus than dung; for after the tan is brought to a proper heat it keeps ſo a long time, and is not ſo apt to burn the roots as dung beds; which, after they have come to their heat, decay much ſooner than the bark, and occaſions much more trouble in lining, as the heat muſt be kept up at that ſeaſon, or all is ſoon loſt.

THE roots of aſparagus are ſoft, ſucculent, and fibrous; and when cut, broke, or diſturbed, are very ſubject to rot: if it does not rot, it puſhes out ſmall ſlender

roots, which ſpread and entangle one amongſt another, ſo that they never make ſuch vigorous ſhoots as when the roots are ſtraight and ſtrong, which they are when ſown and never diſturbed.

THIS is a good reaſon for being at ſo much trouble in preparing the beds before ſowing, alſo for laying ſo great a quantity of dung in the bottom of the trench; for planted aſparagus will never ſtrike their roots ſo deep as what is ſown.

ASPARAGUS ſeed is very hard and dry, and long in coming up; yet it is of ſuch a nature, that if ſown very early, and hard froſts or much rain happen afterwards, it is apt to rot; or if the ſeaſon is mild at firſt, and it comes up ſoon, and a hard froſt ſucceeds, it cuts off the young ſhoots cloſe to the ground, which is a great detriment to the plants, for there are few roots to ſupport them, and a good deal of the ſubſtance of the ſeed is ſpent in producing the firſt ſhoots: thoſe that come after

after are very weak, and it is a year before they recover their ſtrength.

The beſt method is to prepare the ſeed three weeks before the time of ſowing, which then may be three weeks longer deferred, by which time the hard froſts will be over, and the ſeed will be as far advanced as if it had been in the ground in a mild ſeaſon.

To prepare the ſeed, mix an equal quantity of dry ſand and freſh grains from the brewhouſe; rub them well together, lay it in a heap four or five days, then rub and mix the ſeed with it, and put it in a little box or garden-pot, covering it over an inch at top with ſand, and ſet it in a dry airy place; in ſix days examine it, and if it inclines to mouldineſs, rub all over again, and it will require no further trouble, but will be ſprouted, and in good order for ſowing in three weeks.

CHAP. XVI.

On Cabbages.

THE cultivation of cabbages for feeding cattle is of great benefit, and its advantages are ſo great, that it is ſurprizing that it has not become general long before this, eſpecially as there are ſeveral gentlemen that have brought them to great perfection, and found them very profitable.

In ſeveral converſations I have had with farmers on this head, moſt of them made the following objections: That it was too expenſive, and that it impoveriſhed the land; that it alſo required more dung than they could afford. So far they were quite wrong, for it takes no great labour, and it

it greatly improves the land; and if they are properly managed, it ſerves for a ſummer fallow and there will be a very good crop after cabbages without any dung.

If they are well managed and brought to a large ſize, there will be more weight on an acre of good cabbages than there poſſibly can be on an acre of the very beſt turnips. They are eaſier to cultivate; for they are not ſubject to the fly, which in dry ſeaſons often deſtroys whole fields of turnips: whereas if winter cabbage-plants are planted, they ſeldom require any water; and for the ſpring plants, if the ſeaſon is ever ſo dry, a good watering at planting will ſuffice to make them grow.

Cabbages are of great uſe in deep ſnows and hard froſts, when turnips cannot be got; and I have been informed, that if all the rotten leaves are taken off, and the ſound cabbages given to milk-cows, that they affect neither butter nor milk. This I cannot aſſert as a fact that I have ſeen

tried, but I had the information from an ingenious gentleman of veracity.

It is well known by every perſon that has given turnips to their milk-cows, that they give the butter ſo ſtrong a taſte, that in a few days it is hardly eatable, even by thoſe whoſe taſte is not very nice. In markets it is generally the firſt queſtion, Is it turnip-butter? and if it is, no gentry will purchaſe it, and it is always ſold cheaper. If feeding milk-cows with clean cabbages will remedy this, it will be an acquiſition to the public, and a very great advantage to the farmer.

Cabbages will thrive in all ſoils except in poor gravel, which is a great advantage to the farmer, as gravelly grounds are fitteſt for turnips.

In the ſtrongeſt clays cabbages may be brought to great perfection; and as that is not a ſoil fit for turnips, there they muſt be a great improvement; for if moſt of the

farm

farm is ſtrong clay, and unfit for turnips, in years when hay is ſcarce it will be a great advantage to have a good crop of cabbages.

If cabbages are intended to be planted on a very ſtiff clay, ſuppoſe bean or wheat ſtubble, the field ſhould be plowed as ſoon as the corn is cleared, and then again juſt before winter, in the ſame manner; and if the ſpring is dry it will be of ſervice to harrow it well; but that ſhould be done juſt before it is plowed, for it will become very fine by harrowing after the winter's froſt; and if much rain ſhould fall before it is plowed, it will run all together and become quite ſtiff; ſo that it muſt be plowed as ſoon as poſſible after harrowing.

Before the laſt plowing there ſhould be eight or ten loads of good rotten dung ſpread over each acre; then plowed, well harrowed, and planted immediately.

Plants that have been ſown in the autumn,

tumn, and pricked out in beds four inches aſunder, are the fitteſt for clay ground, as they are larger and hardier than thoſe that are ſown in the ſpring, and they may be planted three months ſooner, which will be a great advantage, for they grow very ſlowly for ſome time in ſuch ground; but after they have got good hold they will grow very faſt.

ALL cabbages ſhould be pulled and carried to a fold, or ſome convenient ſhed, to be eaten, it being very improper to allow cattle to go amongſt them; for if they are confined to ever ſo ſmall a ſpace they waſte and deſtroy them greatly; and that is the reaſon the farmers ſay it impoveriſhes the ground, for the crop is carried off and ſpent in another place; but they ſhould conſider what a quantity of dung is got in the fold, the cabbage ground having no need of it, which is a great advantage.

A GOOD crop of beans may be had on clay ground after cabbages without any dung.

If it is intended to have beans, the cabbages ſhould be all cleared off by Candlemas, and the ground plowed and ſown as ſoon as the weather will permit; but if after plowing it was well harrowed, and the beans planted with ſetting-ſticks, there would be a much better crop, and a quarter of the ſeed would be ſufficient.

This is practiſed in many places in the ſouth, where both labour and ground are much dearer than in the north, and they find it turn to good account.

They plant them eighteen inches, ſometimes two feet, row from row, and three inches in the row. Two women, with a bag in their aprons to hold the beans, plant them very quick. They have two lines beginning at oppoſite ends, each planting the whole of their own line, ſo that they are ready at both ends to ſhift the lines. They make the holes with the ſetting-ſtick, and drop a bean in each; and when the field is planted, harrow it all over.

When the beans are two or three inches above ground they ſhould be hoed in the row, to deſtroy the weeds that are in the line of the beans, and then a furrow drawn with a plow between the rows. This furrow ſhould be drawn as ſoon as the beans are hoed, for if they are any taller they will be in danger of being broken. It may lie until the beans are a foot high, and then be drawn up to their ſtems with a hoe.

By this method of working the ground is kept quite clean, and will be almoſt as good as another ſummer fallow. The goodneſs of the crop will pay all the extraordinary expences triple, beſides the advantage of the ground being kept clean.

If the ground intended for cabbages be a ſtrong rich loam (which is the very beſt for them) they will grow very large; but it ſhould be plowed before winter, and lie rough to mellow. If it is to be planted with winter plants, which is alſo the beſt

for

for this ſoil, it ſhould be harrowed, dunged, plowed, harrowed, and planted in ſucceſſion as ſoon as can be; but if it is to be planted with ſpring plants, it ſhould be harrowed as ſoon as tolerably dry in the ſpring, and plowed directly; for if it is not plowed before planting time it will be full of weeds.

JUST before the ſeaſon for planting, which ſhould be as ſoon as the plants can be got to a good ſize, it ſhould be dunged, plowed, and harrowed, and then planted.

LITTLE dung will be ſufficient for ſuch ground, and a good crop of barley will grow after the cabbages without dung.

IF the ground to be planted with cabbages be of a ſandy nature, or a light loam of a good depth, they will thrive extremely well. It would be better to plow it before winter; but if plowed early in ſpring it will anſwer.

GROUND of this nature anſwers the beſt

of any for ſpring plants, it being naturally ſoft, and they will take root much ſooner than in any other kind of ſoil, and it ſhould be dunged and plowed juſt before it is intended to be planted.

AFTER it is plowed it ſhould be well harrowed, and then a ſhallow furrow drawn by the plow at four feet diſtance from one another, and the cabbages planted in the bottom of it at two feet and a half diſtance.

WHEN the cabbages are grown to have three or four inches of ſtem, the weeds ſhould be hoed between the plants in the rows, and the looſe earth that was thrown up in making the furrow, ſhould be drawn cloſe up to the ſtems.

ALL the cabbages that are planted in the different grounds that were winter plants, about the end of June ſhould have two furrows drawn by the plow between every row, throwing the mould up to the cabbages; after which it ſhould be drawn

quite cloſe to the ſtem by a hoe. It will be the middle or latter end of July before it will be neceſſary to draw the furrows and earth up the ſpring plants.

When cabbages are planted in a fine light ſandy ſoil that is of a good depth, if the ground is kept clean, and the cabbages cleared off by Candlemas, the ground may be put in good order to produce a fine crop of carrots.

When carrots are intended after cabbages, the cabbages ſhould be pulled up by the roots, for their roots would be very troubleſome in the carrot ground. The ground ſhould be plowed as deep as poſſible and lay rough.

The ſeed for winter plants ſhould be ſown at two different times, for there is often three weeks difference, or more, in the ſeaſon. The firſt ſowing ſhould be about the latter end of July, and the ſecond about the 18th of Auguſt.

If the autumn is very fine, which often happens, thoſe ſown firſt will be too large; and if they ſtand through the winter many of them will run to ſeed in the ſpring; but if the autumn prove cold and froſty, as it ſometimes does, thoſe laſt ſown will be too ſmall and weak, and unable to reſiſt the cold winds and hard froſts.

When the plants have got four leaves they ſhould be pricked out into beds in an open ſpot in the garden or in the fields (where hares and rabbits cannot come at them) at four inches diſtance every way. If they are planted near walls or hedges it draws them, and they have long ſtems, which makes them weak, and is a great detriment; for it is the ſtrong ſtiff plants which make the large cabbages.

All thoſe that are the leaſt acquainted with gardening know, that if the ſeaſon is dry, all young plants, when firſt planted out, ſhould have water, and it would be very ſuperfluous to direct it; but this is

deſigned for the farmer (not the gardener) who is ſuppoſed not yet to have come to a perfect knowledge of managing plants of this kind.

If the ſeaſon is very dry when the young plants are planted out, they ſhould have a good watering in the evening or morning after planting; but if ever ſo dry ſhould have no more. It is much better for them to be ſtiff and ſhort, both for ſtanding the winter and planting out in the ſpring, than thoſe that are fluſh, tall, and tender, which watering or a wet ſeaſon makes them.

The ground which the young plants are pricked out in to ſtand the winter, ſhould be a good natural ſoil, not made rich with dung; for then the plants grow too faſt, and are ſo thick that they are drawn; and if it comes a hard winter they are in danger of being loſt.

If there are no winter plants, and the whole is to be planted with ſpring plants, they ſhould be ſown as ſoon as poſſible, in a ſpot of good ground that lies pretty warm, to bring them forward.

They ſhould not be ſown too thick, and it would be worth the labour, after they are come up, to thin them by hand to four inches diſtance, as the trouble would be all ſaved in the planting, beſides the advantage of the plants being much larger; for when they are very thick they are long ſtemmed, crooked, and very troubleſome to plant, which they are not when thin.

The ſeaſon for planting plants that have been kept over the winter, is any time from the beginning of March to the end of April; but the ſooner they are planted the crop will be the better; for in that early ſeaſon they have a good chance to get rain after planting; and as the ground is for the moſt part moiſt, they will re-

quire no watering when planted, which is ſaving more labour and expence than the tranſplanting of the plants coſts in autumn, beſides the advantage of the plants having almoſt three months longer to grow.

If ſharp froſts ſhould enſue after the cabbages, are planted in the fields, it will not hurt them, for the moving makes them more hardy than if they had not been tranſplanted.

It will be the beginning or middle of June before the plants that are ſown in ſpring are ſtrong enough to plant out. It is wrong to plant them ſmall in the field, for if the ground is not fine it will be very difficult to make them faſt, and at that ſeaſon the weather is generally hot. If they are not good large plants they will ſtand a bad chance, although they are well watered when planted.

If the weather is rainy and dull, it will be much better for them; and if there is an appearance of rain it will be right to wait a few days; for it is much better planting if the ground is wet at top, as it prevents the mould running into the hole, which is very troubleſome in planting.

If a good deal of rain ſhould fall juſt at the time of planting (but it very ſeldom happens that a ſufficiency falls at that ſeaſon to moiſten the ground deep enough for the roots of the plants) it would even be a great ſervice to them to be watered when the weather is dull. One quart will be of more advantage than a gallon when it is hot and dry; and if in a few days it ſhould be very hot, and continue ſo for a long time, they will require no more watering.

If the ground has been well prepared, and is very tender and fine, it will have a good deal of moiſture in it; and if ſome rain has fallen they may do without water; but

but if the ground is rough and lumpy, water is abſolutely neceſſary, although there has been a good deal of rain.

If cabbages are managed on the different ſoils, as here directed, they will be a profitable crop, and few will be without them after they have experienced the great advantage they are of in winter-feeding.

No cattle are fond of eating vegetables when they are frozen; therefore if the cabbages are carried home and laid in a cow-houſe ſingly, where cattle are kept, the heat of the place will ſoon thaw them; but if they lie in a heap they will continue frozen, although in a very warm place.

It will require no great room to thaw them; for after a few are thawed, and the cattle fed, ſome may be laid all along behind them, to be ready againſt theſe are eaten. This will be very little trouble, the cattle will be much better fed, and there will be no waſte.

CABBAGES may be taken up and laid cloſe together in the earth and covered with peaſe or bean ſtraw to keep the froſt from them; that light covering will admit the air and prevent their rotting.

THE feeding in winter with vegetables that are not frozen muſt be a great advantage; they are more nouriſhing and make the cattle much fatter and ſooner.

CHAP.

CHAP. XVII.

On Carrots.

CARROTS are another very beneficial vegetable for feeding, and many other profitable uſes. The cultivation of them in all the different ſoils they will thrive in will be very advantageous to the farmer. I ſhall endeavour to give ſuch plain and eaſy directions for the propagation of them, as I hope will be ſucceſsful, allowing for the common accidents of ſeaſons.

ALL the farmers may keep their horſes from the beginning of September to near May-day with carrots and hay, without one grain of corn, which muſt occaſion a great ſaving of oats.

The following is an abſolute fact: That three acres of carrots, on a ſoil that is not the very beſt for the growth of them, ſupported twenty-four working horſes, thirty grown ſwine, and ſeveral young horſes and cattle, from the end of October to the beginning of April. The horſes were worked every day, looked well, and were fat.

Besides there were quantities frequently given to the milk-cows during that time, which had no bad effect on the milk; and they gave a greater quantity at a meal than if they had not had carrots, and the butter was ſweeter than of thoſe which were fed with the beſt hay only.

The labour in keeping carrots clean is not much different, nor more expenſive, than that of turnips, where turnips are hoed and kept clean as they ſhould be.

Turnips will be ſomething like a crop, although they are not hoed, and are full of weeds, and there are many places

where ſuch ſlovenly work is ſeen; but the occupiers of the grounds ſuffer for their negligence, both in the loſs of turnips and the dirtineſs of their grounds, as the ſeeds blow all over the farm; but unleſs carrots are kept clean and hoed to a proper diſtance, they will be good for nothing.

I AM of opinion that there are few farmers, after they have found the great advantage carrots are of in feeding, but will endeavour to have ſome acres of them, which requires no great art, if the whole farm is not a hard clay or a ſhallow gravel; in that caſe it is in vain to attempt their propagation.

CARROTS will thrive on ſandy grounds of all kinds; light loams, ſtrong loams, light black moulds, and all kinds of land that is of a looſe, open nature.

THE ground which carrots are ſown on ſhould never be dunged that year; but they

they ſhould follow a crop that has been dunged the preceding year; for the ground muſt be in good heart, or there will be little profit.

THERE is no crop that prepares the ground ſo well for carrots as cabbages; when carrots are intended after cabbages, before the cabbages are planted the ground ſhould be well dunged previous to the laſt plowing.

THE cabbages ſhould be all got off by Candlemas, and as ſoon as the ground is tolerably dry it ſhould be plowed as deep as the plow can go, and lie rough until near the time of ſowing: it then ſhould be well harrowed with a large harrow, which will make it fine at top. It muſt be plowed again directly, for if rain ſhould come before it is plowed, all the fine mould at top will run into a hard cruſt, and all the advantage of the early plowing will be loſt.

THERE

THERE are ſome kinds of ſoils (which have been mentioned before) that cabbages will thrive on, that are not fit to be ſucceeded by carrots; but as carrots are ſo advantageous a crop, if there is any ground in the farm that is fit for them, it ſhould be ſo contrived as to be planted with cabbages, that the carrots may be ſown after them.

IT is a good method, where there are large quantities of potatoes propagated, to plant firſt potatoes, which are always dunged with long dung.

TO prepare the ground properly, it ſhould be plowed as ſoon as the potatoes are taken up, to mix and rot the long dung that they were planted with. It ſhould lay rough all winter; early in the ſpring harrowed, then dunged according as the ground is in heart; then plowed, harrowed, and planted with cabbages, to be managed as before directed, and ſown with carrots next ſpring.

ALL

All thoſe crops will thrive on the ſame ſort of ſoil, and produce good crops of each kind.

If the crops are ſown in this ſucceſſion, the potatoes ſhould be kept very clean, and no weeds allowed to ſeed on the ground; for if they do they will be very troubleſome in the carrot ground.

The cabbages the next year muſt alſo be hoed and kept clean, and well plowed between the rows, which is almoſt as good as a ſummer fallow; by this management the carrot ground will be in ſuch good order next ſpring that the hoeing will be eaſy, and the crop good.

The beſt ſoil for carrots is the black deep ſandy grounds that are in low bottoms by river ſides; there they grow large and fine, and prove a very profitable crop. If ſuch ground can be had, the labour will be trifling. Suppoſing it had produced cabbages the year before, it ſhould be plowed

plowed when the cabbages are got off, and lie rough until the time of ſowing the carrots, and ſhould then be harrowed with a large harrow, plowed immediately, and harrowed, the ſeed ſown, and then ſlightly harrowed with a buſh-harrow.

If the ground intended to be ſown be a deep but hungry ſand, it ſhould be managed in the ſame manner, but ſown as early as poſſible; for if the plants do not get good hold of the ground before the dry weather comes on in the ſpring, they will come to nothing; but if ſown early, there will be a fine crop.

Sandy loam is a very good ſoil; ſuch ground is always of a good depth, and a fine crop may be expected. It ſhould be treated much in the ſame manner as the former, only it will require a little more harrowing before the ſeed is ſown.

If ſtiff loam, carrots will thrive very well; but it will require a good deal more working

working to reduce it; for rough ground is very unfit for carrots.

If ſtiff loam has not produced cabbages the year before, it would be much better to be fallow for a ſummer; and if it is not in good heart, to have five or ſix loads of very rotten dung per acre ſpread over it in ſummer, and plowed in directly. It ſhould be kept very clean.

This method will be much condemned by the generality of the farmers as too expenſive, on account of the two winters and one ſummer's working and dunging alſo for one crop; but I am ſure it will pay very well, for it will produce a very good crop if the ſeaſon proves temperate.

If there is a more proper ſpot I would not recommend ſuch ſoil, only in caſe of neceſſity, that it is the beſt in the farm, that thoſe who have not a fitter ſoil may not deſpair of having good carrots.

BLACK mould, and all looſe earths, will anſwer very well for carrots; but they ſhould be ſown early, for the ſame reaſons that were given for ſowing ſandy ground.

IF the beſt ground in a whole farm is all ſtiff and next to a clay, it is very unfit for carrots; but at a ſmall expence it may be made to grow them tolerably well; and the ground will alſo be greatly improved for all kinds of grain, and laſt many years.

THE following compoſition, prepared and laid on, and plowed and harrowed two or three times afterward, will mix with the natural ſoil, and bring it into good order for ſowing. If the ſeaſon is not very wet there will be a good crop.

TWELVE loads of ſharp ſand, four load of light looſe earth, and one load of rotten dung, all well mixed, and turned at leaſt twice before it is laid on. Twelve loads to an acre will do pretty well; but

to

to make the ground very good it would take ſixteen.

All the expence of this muſt not be reckoned to the account of the carrots, for next year a good crop of turnips may be had, if the ground is plowed and laid rough all winter, and properly worked in the ſpring, and ſown at the uſual time.

The ground that is intended for carrots ſhould always be plowed in the autumn, and lie rough all winter; but if they are to ſucceed cabbages, theſe ſhould be all got off by Candlemas, and the firſt time the ground is tolerably dry it ſhould be plowed, that it may get ſome froſt to mellow it.

If the ground intended for carrots is of a ſtiff nature, it ſhould be well harrowed with a large harrow every time juſt before the plowing; but it ſhould be dry when both harrowed and plowed; for wet plowing is very detrimental to all ground,

ground, but much more ſo to ground where carrots are to be ſown.

The reaſon for ſo much harrowing is, that the ground may be all very fine the depth of the plow; for if the ſurface be only fine and rough below, the clods will ſtop the ſmall roots of the carrots in their going down, and make them forked and good for nothing.

If the ground was quite hard it would be much better for them than rough; for, when rough and looſe, the ſmall end, as ſoon as it meets with the leaſt obſtruction, (if the mould is looſe) the root bends, and ſo grows into many forks; whereas if the ground is all equally hard and free of ſtones, they will ſtrike a great depth into the hard ground.

The ground ſhould never lie any time after the laſt plowing before it is ſown; for if dry weather ſhould ſet in, the ſeed will lie a long time before it comes up,

and a great deal of it will not appear until there is rain.

THE weeds at the ſame time will grow, and there is no hoeing until the carrots are all up: in that caſe the largeſt of the weeds muſt be pulled by the hand; for if they are permitted to grow until the carrots are viſible, they will be too ſtrong to cut with the hoe; and if then pulled they will draw many of the carrots out of the ground, for there are many of the annual weeds that ſpread their roots very much when they are permitted to ſtand to grow large.

WHEN the ſeaſon will permit, the earlier the carrots are ſown the better: if the ground is tolerably dry, they may be ſown the beginning of March, for after they are come up they will ſtand a hard froſt without ſuſtaining any injury.

THEY ſhould be ſown as ſoon as poſſible after the ground is plowed for the laſt time.

time. The method to proceed is this: plow and harrow; then ſow and harrow again.

If the ſoil is ſtiff (which it will not be if it has been managed as directed) a heavy harrow ſhould be drawn over it three or four times before it is ſown, and then harrowed twice over with a light harrow after it is ſown. A pound and a half of ſeed is ſufficient for an acre; but thoſe who have not been accuſtomed to ſow it had better uſe two pounds. They are eaſily cut out in hoeing, if too thick.

The ſeed being very light, the huſks that adhere to it make it very apt to ſtick cloſe, and render it hard to ſeparate; therefore the beſt method is to mix it with twice as much ſand as ſeed, of a different colour from the land that it is ſown in; if the land is of a red colour uſe white ſand, and red ſand, if the ground is of a whiteiſh colour; rub it between the hands until the huſks are moſtly broken off; then the

ſeeds will fly more regularly, and the ſand will ſhew where the ground is ſown. It is more difficult to ſow than turnips, but a little practice will make it eaſy.

The beſt method of ſowing carrots is to prepare the ſeed before ſowing; and then, if ſown as directed, it will be all up as ſoon as the annual weeds, and may be hoed before the weeds come to any height, which is of great advantage, and ſaves much labour.

To prepare the ſeeds: Take three parts dry ſand and one of freſh grains from the brewhouſe, mix both together, rub it all over between the hands ſeveral times, and then lay it in a box.

This muſt be repeated daily for four or five days; then it ſhould lie four days, and be rubbed again; in four days more it ſhould be examined, and if there be no ſigns of mouldineſs it ſhould be covered an inch thick with dry ſand, and remain

for

for fifteen days, by which time it will begin to ſprout, and be in proper order for ſowing.

If there be any ſigns of mouldineſs when the ſeed has lain eight or nine days, (for it will be right to examine it about that time) it muſt be all turned out of the box and rubbed over; and if it appears to be wet, it ſhould be ſpread a few hours in an open airy place, but not in the ſun, and then put up again, and afterwards there will be no danger of its moulding.

As ſoon as the carrots are fairly up they ſhould be hoed with a three-inch hoe. If the weather is favourable they will grow very faſt, and in ſix or eight weeks will want hoeing again, which may be performed with a ſix-inch hoe, and left at that diſtance.

Two hoeings will be ſufficient for the prepared ſeeds, if the ground be in tolera-

ble good order; for before any weeds can grow after the ſecond hoeing, the plants will cover all the ground and prevent them.

When the carrots are taken up they may be laid in any dry place; but where there is a quantity it would be beſt to build a ſhed or hovel on purpoſe for them. It may be a double roof, or a ſhed againſt a wall; if againſt a wall, it muſt be well ſecured at top between the wall and the ſhed, for the wet is apt to come in there, and run down the rafters, and ſpoil the whole.

A detached hovel is the beſt with a double roof, the ſide-walls of which ſhould be about ſix feet high, and the breadth of the houſe ten or twelve feet; for if it was much broader there would be too great a body of carrots, and they would be apt to heat. The ſide-walls would be better if made of whins very cloſe, as they admit

mit a free air and keep out the froſt; for a wall would make it very damp.

The roof ſhould be thatched, as it will keep out the froſt much better than any other kind of covering. The floor ſhould be a foot higher than the ground round, in order to keep the carrots dry; and if the ground is wettiſh, it ſhould be raiſed with dry rubbiſh, that there may be no damp at bottom.

The ſhed, or hovel, ſhould be got finiſhed in the beginning of the ſummer, that all may be perfectly dry; and as ſoon as poſſible a good quantity of ſand laid in, in dry weather, the ſharper the better.

There can be no particular time fixed for taking up the carrots; but as ſoon as the tops begin to grow yellow it ſhould be done.

The weather ſhould be dry and fine; for if they are taken up wet it will be

very bad for them. They ſhould never be taken up when it is froſty.

A NUMBER of men ſhould be employed to take them up with dung-forks, and women ſufficient to cut off their tops at an inch from the carrot, and put them into carts to be conveyed home.

IF the ground is light and ſandy, and the weather dry, they will be very clean; but if the ground is of the loamy kind, the mould adheres to them, which ſhould be rubbed off with the hand, and care ſhould be taken not to break the rind. Thoſe that are cut or broke, ſhould be thrown by for preſent uſe.

WHEN they are brought home there ſhould be an inch of the dry ſand ſpread over about ſix feet in length of the floor, and ſome very dry wheat-ſtraw laid up at the end and both ſides of the houſe; then the carrots ſhould be brought in and laid even on the floor a foot thick, and a pile of

of them made ſtrait up at ſix feet diſtance from the end of the houſe.

A LITTLE ſand ſhould be ſprinkled in amongſt them, and ſome at both the ſides; then another foot of carrots and ſand, as before, until they are within a foot of the top of the houſe. The laſt layer ſhould be covered two or three inches with ſand.

WHEN that layer is finiſhed another ſhould be begun in the ſame manner, and carried up after the ſame method, until the houſe is filled, or the carrots houſed, taking care to lay ſand on the floor at the beginning of every layer, and to fill up the ſides of every layer with ſand, to protect the carrots from froſt and air. If the ſide-walls of the hovel, or ſhed, are made of whins, the air will paſs all round the ſand that is laid on the outſides, and keep the whole dry.

IT will be neceſſary to have two doors in the ſhed, or houſe, if it is of any length, for

for the conveniency of houſing the carrots; for it would be very troubleſome to go the whole length of the houſe with every baſket of them.

CARROTS laid up in this manner will keep very well till May, and be as firm and good as when firſt taken out of the ground.

THE horſes that have not been accuſtomed to feed on them will be very nice at firſt, and will not eat them; therefore they ſhould be cut ſmall, and mixed with their corn, and they will ſoon grow ſo fond of them as to leave corn and feed on the carrots.

THERE will be no occaſion to cut them after the horſes have taken to eating them. Cows and young cattle will feed on them very freely at firſt. The ſwine want no invitation, and for them they want no waſhing.

UNFORESEEN accidents ſometimes happen, ſo that there may be poor crops of carrots; this is common to every thing that is ſown; and although all the directions are followed, and the ſoil proper and in good order, the ſeaſon may be ſo bad and contrary to them that there may be few; but this will ſeldom happen.

ACCIDENTS of this kind often happen in all the common courſes of gardening and huſbandry that have been in practice for many years, and allowed to be a good and ſubſtantial reaſon; but in things that are new, if the ſeaſon is ever ſo bad and contrary, the fault is laid to the new projects as being of no utility, only ſpeculative, and without any real exiſtence but in the brain of the projector.

LET no ſuch prejudices as theſe affect thoſe that intend to make trial of growing carrots; for although they ſhould be unſucceſsful in the firſt, and even in the ſecond attempt, let them perſevere with reſolution,

ſolution, and they will find their labour well rewarded, for they are in general a more certain crop than any thing that is ſown for feeding, and of greater profit than any one can conceive that has not tried them.

THE truth of this I can aſſert by what I have ſeen, and by what has been done at Sir Thomas Gaſcoigne's, at Parlington, where they are the moſt advantageous and profitable vegetable for feeding cattle that is ſown or planted in England.

GREAT advantage may be had from the cultivating of carrots in large quantities, as they feed working horſes, cattle for fattening, young cattle, and ſwine, without corn, which muſt greatly leſſen the conſumption of oats.

THE kinds of carrot-ſeeds proper to ſow in fields are the large red-horn carrot, and the long large orange.

IF

If the ground is ſhallow the horn-carrot is the only ſeed fit to ſow; they will go down as far as the ſoil will permit, and grow to a great thickneſs, ſo that many of them will weigh four or five pounds, and even in ſuch ground will be a very profitable crop.

If the ground is ſandy and deep, the large orange carrot is the beſt kind. Although it is a hungry, poor, ſandy ſoil, if it is ſown early it will produce a good crop, if it has been managed according to the directions here given.

If the ground is a good, deep, ſandy loam, ſuch as the ſoil is in general about Pontefract, in Yorkſhire, they will grow to an immenſe ſize, and produce a crop advantageous beyond imagination.

In ſuch ground, if hoed to a proper diſtance, which ſhould not be leſs than ten inches, and kept clear of weeds, they will grow to be ten and twelve pounds weight.

CHAP.

CHAP. XVIII.

The Cultivation of Turnips, and the Method to keep them from Froſt in Winter.

THE cultivation of turnips is ſo well known all over England, that it may ſeem ſuperfluous to give any further inſtructions with regard to their culture: yet, notwithſtanding they are already brought to great perfection, there are ſtill ſome particulars that are not generally known, which, if put in practice, would render that uſeful vegetable of double the value it is at preſent eſtimated, for the feeding of cattle.

I SHALL endeavour to give ſome uſeful directions reſpecting the ſowing in drill and broad caſt, and the proper ſoils for this kind of huſbandry. Dry, light, gravelly

gravelly ſoil is the beſt kind for turnips, in which they ſhould be ſown broad caſt, and never in drills; for the ground being naturally dry, if thrown up in ridges it becomes ſo light, that if the ſeaſon ſhould prove very dry there will be little proſpect of a ſucceſsful crop. The more the ground is worked, and the finer it is made, the moiſter it will be, although plowed when very dry, and a great drought follows.

DUNG laid on light ground for turnips ſhould be ſo rotten, that it will ſpread like aſhes. The beſt method to ſow ſuch ground is to harrow it firſt, then plow it, and ſpread the dung as you would lime or aſhes: this done, give the whole a triple harrow, which muſt be very heavy, to incorporate the dung properly with the mould. Sow the ſeed, and give the ground a ſingle turn with a light harrow, drawn with ſmall thorns, to prevent the harrow making drills, leaving a ſmooth ſurface. If the weather is hot and dry,

and

and the ground light, it would be of conſiderable advantage to the turnips to roll the ground a day or two after the ſowing. If the ground is very ſtrong, drilling will be a more certain method for a good crop than any other I know in practice. When that is the caſe, the land muſt be plowed and harrowed frequently; it ſhould be harrowed after every plowing, but not till juſt before it is to be plowed again; for if it was to be harrowed ſoon after the plowing, and much rain was to fall, it would be ſtiffer the next plowing than if it had not been harrowed at all.

If the ground is very rough after the firſt plowing, which ſhould always be performed when the ſurface is dry, and a week or two of fine dry weather ſhould follow, and then a good deal of rain, the day after, if it was well harrowed with a heavy harrow, it would break the earth very fine; but it muſt be plowed immediately, for if it was to rain much, it would become a ſolid maſs, and it would be impoſſible to get it into order in proper time.

It is proper to ſow after a thorough harrowing. This management will alſo anſwer for broad caſt. If the ground is very rough, the day after plowing, it muſt be harrowed with a heavy harrow, and then rolled with a ſpike roller, which will break many of the clots.

If the ground is not ſubject to wet ſtanding on it, in the winter the drills ſhould not be raiſed more than three inches above the level; for in winter when the ſheep are wet, many of them would be loſt when the drills are high. If the land is liable to have the wet continue on it after rain, the drills ſhould be raiſed in proportion, and then the turnips ſhould be pulled, and the ſheep fed in a dry field. It muſt be obſerved, that fat ſheep ſhould not be fed on ſuch ground.

The diſtance for horſe-hoeing and plowing between the furrows or ridges ſhould be two feet; but if the ground is to be cleaned with the hand hoe, they

may be from ſixteen to twenty inches. The horſe-huſbandry is preferable where the land is ſtiff, as the plowing and turning the land, that is to be ſowed with turnips the next year, makes it fitter for ſowing; beſides it is full as good as a ſummer's fallow.

WHERE the horſe-huſbandry is uſed, and the diſtance ſo great as two feet, it is alſo abſolutely neceſſary to have them two years in the ſame field, that is, where the opening between was the firſt year, ſhould be the place for the drill the following year; by this means the field is equally dunged, and all of it has two years fallow.

WHERE this method is practiſed on ſtiff land, and the land kept clean, it is of greater advantage than can be conceived, and the future crops will amply repay the expence and trouble.

THE dung for ſowing turnips in the drill way ſhould be very rotten, and turned until

until it is ſo fine that it may be ſown by hand into the drill; and if ſome good ſand was mixed with it, and well incorporated, it would be of great ſervice to the crops of turnips, and a great benefit to the land afterwards.

When the land is very rough, rolling it with a ſpike-roller would break many of the clots, which ſhould be performed the day after plowing; let it be harrowed well with a heavy harrow, and then rolled; plow it again directly after rolling.

It is a common error to make ſpike-rollers too heavy. If the ground is very rough (which is generally the caſe when they are uſed) it is very difficult to draw them; beſides they preſs the hard lumps that will not readily break into the ground like ſo many ſtones, which will be found very troubleſome the next plowing.

The hoeing and keeping clean the ground, where turnips grow, ſhould never be neglected. Some content themſelves

with pulling out all the great weeds that are above the turnips, and would prevent their growth; but pay no regard to the ſmall ones, even with the turnips, and ſo full of ſeed that they ſtock the ground with annual weeds for ſeveral years.

THERE has been a great deal written about the cultivation of turnips, but little ſaid concerning their preſervation, which is an article that would be of immenſe profit if properly attended to, that is, to ſave them from the froſt.

THE beginning of long and ſevere froſts in general are moderate at firſt; ſo that the cattle feed on them with eaſe for ſome days before the turnips are frozen through; in that time the tops of many of them are bit, the froſt continues, and often a fall of ſnow comes, which lays on the ground perhaps ſome weeks. As ſoon as there is a thaw all thoſe that were bit rot directly, and many of the largeſt turnips alſo (although not bit) which are

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in general ſpungy, and when once frozen through they ſoon rot.

When the turnips are come to their full growth, on a fine dry day pull up all the largeſt, and cut off the tops an inch from the turnips for the ſheep to eat, for if they are cut cloſe they are ſubject to rot.

If this method is put in practice there will be few of the turnips loſt by rotting, and ſave hay in the ſevereſt weather, which will be a great advantage in years when that article is ſcarce; the ſmall ones will reſiſt the ſeverity of the winter, and be good feeding late in the ſpring: the turnips will be of great value, as they will afford ſufficient food through the winter; but few muſt be given at a time, that they may be all eat before they are frozen.

From November 1776 to March 1777, although the winter was not ſo ſevere as many I have known, yet the frequent changes from froſt to ſnow and rain

rotted one half of moſt fields of turnips that were large. If the ground is dry, a large pit dug and covered with ſtraw to prevent the wet and froſt will keep them: a thatched hovel will anſwer, or they may be made into a long or round ſtack, but that is not ſo convenient for taking them out, being ſo very liable to tumble down.

The ſheep ſhould be fed in the ſevere winter weather on dry graſs fields in the fold, and if the ground is ſtiff where the turnips grow, it would be better not to feed on it in the ſpring.

It is a great profit in hard froſts and deep ſnows to have plenty of turnips to feed with; and what makes it ſtill more profitable is, that moſt of thoſe turnips that are then feeding and fattening the cattle would have been rotting in the field as ſoon as the thaw came, if they had not been ſecured from the froſt. According to the preſent method of feeding ſheep on turnips, when there comes a deep ſnow

they

they muſt have hay, and the turnips they ſhould be eating are rotting in the field, and are of little ſervice to the land they rot on. If the cattle are fed on the largeſt of the turnips in winter, the ſmall ones that are growing will not run to ſeed ſo ſoon in the ſpring as the large ones would have done, ſo that there will be food for the cattle much longer, and between the turnips, and the graſs, there will not be a ſcarcity of food for ſheep; thoſe that were laſt pulled would laſt until the graſs was grown, which would be a great advantage to the farmers.

The advantages in managing the turnip crop, as here directed, are many, and eaſily put in practice; the expence of hoeing is trifling, and very little more trouble than feeding with hay, and the profit to the farmers will be very great, if the whole is put in practice.

FINIS.